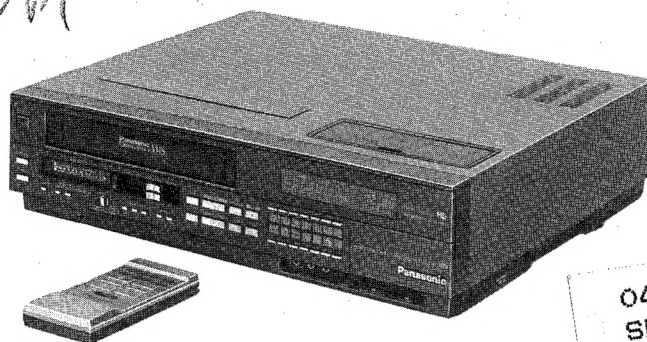


Service Manual

Video Cassette Recorder

Panasonic
Omnivision **VHS**
PV-1631M



04120526 91004988
SM-PV1631M
SERVICE MANUAL

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SPECIFICATIONS

Power Source: 110/120/220/240 V AC $\pm 10\%$ AUTO,
50/60 Hz $\pm 0.5\%$

Power Consumption: Approx. 28 watts

Television System: EIA Standard (525 lines, 60 fields)
NTSC color signal

Video Recording
System: 4 rotary heads, helical scanning system
Luminance: FM azimuth recording
Color signal: Converted subcarrier phase shift recording

Audio Track: 2 tracks (NORMAL), 2 channels
(Hi-Fi AUDIO SOUND)

Tape Format: Tape width 1/2" (12.7 mm), high density tape

Tape Speed: SP mode: 1-5/16 i.p.s. (33.35 mm/s)
LP mode: 21/32 i.p.s. (16.67 mm/s)
SLP mode: 7/16 i.p.s. (11.12 mm/s)

Record/Playback Time: 8 HRS. with 160 min. type tape used in SLP mode

FF/REW Time: Less than 6 min. with 120 min. type tape

Heads: Video: 4 rotary heads
Audio: 2 stationary heads,
(NORMAL AUDIO SOUND)
2 rotary heads
(Hi-Fi AUDIO SOUND)
Control: 1 stationary head
Erase: 1 full track erase
1 audio track erase for audio dubbing

Input Level: Video: VIDEO IN Jack (RCA type)
1.0 Vp-p, 75 Ω unbalanced
Audio: AUDIO IN Jack (RCA type)
(Right, Left)
-20 dB, 50 k Ω unbalanced
MIC IN Jack (M3) (Right, Left)
-70 dB, 4 k Ω unbalanced

TV Tuners: VHF Input: VHF Ch2-Ch13,
cable channels "A"—"W",
"A-2", "A-1" 75 Ω unbalanced
UHF Input: Ch14-Ch83,
300 Ω balanced

Output Level: Video: VIDEO OUT Jack (RCA type)
1.0 Vp-p, 75 Ω unbalanced
Audio: AUDIO OUT Jack (RCA type)
(Right, Left)
-9 dB, 600 Ω unbalanced
RF Modulated: Ch3/Ch4 switchable,
72 dB μ , (Open Voltage)
75 Ω unbalanced

Video Horizontal
Resolution: Color: more than 230 lines
B/W: more than 230 lines

Audio Frequency
Response: 20 Hz ~ 20 kHz (Hi-Fi AUDIO SOUND)
(10 dB down)

Signal-to-Noise Ratio: Video: SP: better than 43 dB
LP: better than 41 dB
SLP: better than 41 dB
(Rohde & Schwarz noise meter)

Dynamic Range: Audio: better than 80 dB
(Hi-Fi AUDIO SOUND)

Wow and Flutter: 0.005% (Hi-Fi AUDIO SOUND)

Operation
Temperature: 41°F—104°F (5°C—40°C)
Operating Humidity: 10%—75%
Weight: 17.2 lbs. (7.8 kg)
Dimensions: 16-15/16" (W) \times 14-5/16" (D) \times 4-1/4" (H)
(430 mm \times 364 mm \times 108 mm)

Accessories Supplied:

- Wireless remote control unit
- VHF connecting cable
- 300 Ω —75 Ω transformer
- Twin-lead cable
- V-Lock tool

Available Tapes: 1/2" VHS video cassette tapes
NV-T160 Approx. 1073 ft. (327 m), 160,
320, or 480 min.
NV-T120 Approx. 810 ft. (247 m), 120, 240,
or 360 min.
NV-T60 Approx. 417 ft. (127 m), 60, 120,
or 180 min.

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

VHS

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

INTRODUCTION

This Service Manual contains information which will allow the service technician to understand and service the Panasonic VHS recorder Model PV-1631M and the various accessories that complement the deck.

For a detailed technical explanation, please refer to the Training Manual on this model. Some of the Features incorporated in this model are: soft touch controls 14 position Electronic Tuner, 2 weeks/8 program Timer, Wireless Remote Control, One Touch Record Button (O.T.R), Picture Search, Field Still, Light Editing, a *Dolby Noise Reduction system for normal audio, Hi-Fi Audio HD Sound System, Auto Rewind, Frame Advance, Field-Slow.

This model use a multi-function display indicator which combines indicators for time, tape counter, speed, transport functions, and timer record into one easy to read digital display.

The above features plus the VHS format make the PV-1631M table top VCR's an excellent unit for your enjoyment.

Just slightly ahead of our time...Panasonic.

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* Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shileds are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.
4. USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{M}\Omega$ and $5.2\text{M}\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

LEAKAGE CURRENT HOT CHECK (See figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5\text{k}\Omega$, 10 watts resistor, in parallel with a $0.15\mu\text{F}$ capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

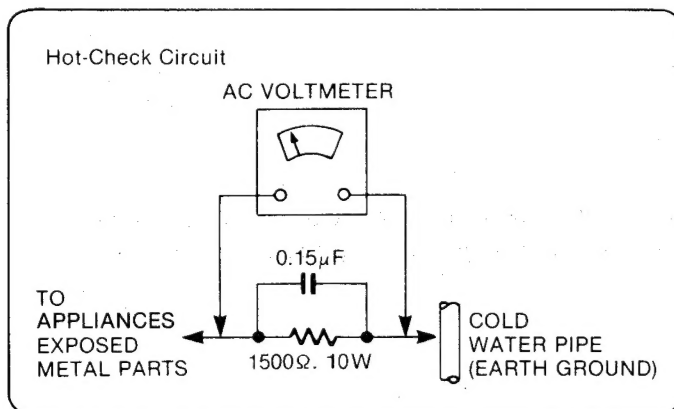


Figure 1

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

"NOTE to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical".

FEATURES

Your Panasonic VCR has these special features to enhance your viewing enjoyment. Feature operations are described at the referenced page numbers. To locate other information, please refer to the Table of Contents.

Watch one channel while recording another

Audio 2-channel

Fine-editing

Cable-ready

Multi-motion playback

- Fast Search
- Field-Still
- Frame Advance
- Field-Slow

DOLBY Noise Reduction System

Unattended (Timer) Recording

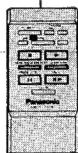
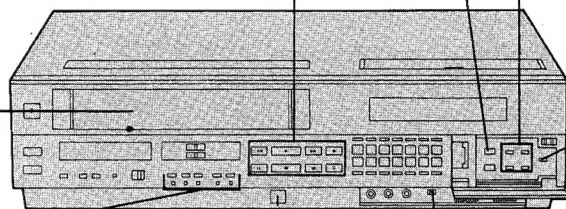
Front Loading

Extended Timer One Touch Recording (240MIN)

Hi-Fi AUDIO HD SOUND SYSTEM

WIRELESS REMOTE CONTROL

Up to Eight-hour recording

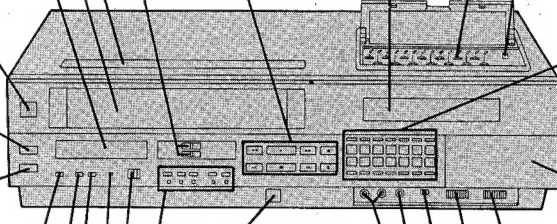


This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

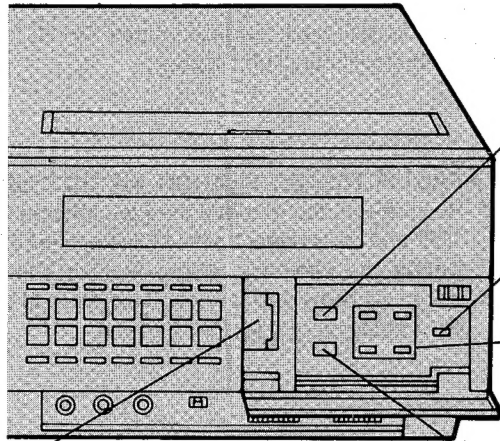
This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

DESCRIPTION OF CONTROLS

TOP and FRONT

- 
- **CASSETTE WINDOW**
 - **CASSETTE COMPARTMENT**
 - **REC LEVEL METER**
For monitoring the Audio Level during recording or playback.
 - **EJECT BUTTON**
Push this button to remove the cassette. "■" flashes on the Multi Function Display while the tape is being ejected.
 - **POWER BUTTON**
This button is used to turn the VCR on and off. When this button is pushed, counter appears on the Multi Function Display.
 - **VCR/TV SELECTOR**
VCR: To monitor video recordings or to view playback.
TV: To watch TV or to view another program while recording a different program.
When this is set to VCR, "VCR" appears on the Multi Function Display.
 - **TIMER BUTTON**
This button is used to put the VCR in Unattended Recording mode after programming functions have been completed.
When this button is ON, "□" appears on the Multi Function Display, and you will not be able to operate the unit manually.
 - **MEMORY BUTTON**
When this button is in the "ON" position, the tape will stop when the Tape Counter reaches "0000" during rewind.
 - **REC LEVEL CONTROLS**
For manual operation of Audio Rec Level, with Hi-Fi AUDIO sound, set the REC LEVEL Switch to MANUAL and adjust both REC LEVEL Controls until the REC LEVEL Meter reads around 0 dB. This position usually indicates the best sound reception.
 - **MULTI FUNCTION DISPLAY**
 - **PUSH BUTTON CONTROLS**
 - **WIRELESS REMOTE SENSOR**
Receives signal from Wireless Remote Control.
 - **AUDIO OUTPUT SELECT BUTTONS**
INPUT SIGNAL SELECTOR
AUDIO: For use this VCR as an Audio Tape Deck.
LINE: For re-recording, audio dubbing or camera recording.
TUNER: For regular TV recording with monaural sound recording.
AUDIO 2 CH: For simulcast (stereo) recording.
 - **DOLBY NR INDICATOR**
When DOLBY NR Switch is ON. Indicator light goes on.
 - **RESET BUTTON**
Pushing this button causes the Tape Counter to return to "0000". By beginning the recording at "0000", subsequent playback will be more convenient.
 - **UHF/VHF/CATV FINE TUNING CONTROLS (UNDER HINGED COVER)**
 - **AUTOMATIC FINE TUNING (AFT) SWITCH (UNDER HINGED COVER)**
Under normal conditions, leave the AFT Switch "ON".
 - **CHANNEL SELECTOR BUTTONS/INDICATOR LIGHTS**
Select the channel (2~83, A~W, A-2, A-1) you wish to view or record by pushing any one of these 14 buttons.
 - **BEHIND HINGED PANEL**
 - **TRACKING CONTROL**
Use this control during regular playback if the image is partially obscured by bands of noise.
 - **SLOW TRACKING CONTROL**
If the slow-motion or still picture contains bands of noise, this control may require adjustment.
 - **TAPE-SPEED SELECTOR (SP/LP/SLP)**
Set this selector for the desired recording speed.
 - **HEADPHONES JACK**
For connecting a Headphone.
 - **MICROPHONE INPUT JACK**
For connecting a Microphone. This is useful for recording and audio dubbing.

BEHIND HINGED PANEL



- **CHANNEL NUMBER HOLDER**
Pull it out for changing channel tabs.

DOLBY NR SWITCH

Set this switch to ON for audio noise reduction. Indicator lights when ON.

ONE TOUCH RECORD (O.T.R) BUTTON

One Touch Recording enables you to do impromptu recordings at any time. Just select the channel and push the ONE TOUCH RECORD Button for 30 minutes to 4 hours of recording.

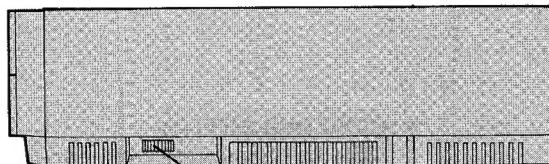
TIMER CONTROLS

Use to set the clock or to set the Timer to make an Unattended Recording when you are away from home, busy or asleep.

REC LEVEL SWITCH

When this switch is in AUTO position, audio recording level is automatically adjusted.

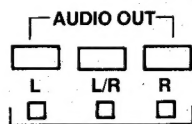
SIDE



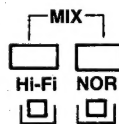
PICTURE CONTROL

Use this control to make the picture softer or sharper, whichever you prefer.

AUDIO OUTPUT SELECT BUTTONS



- **AUDIO OUT BUTTONS/INDICATOR LIGHTS**
One of these buttons is used to select the audio signal for the TV speaker, a Headphone, or AUDIO LINE OUT.



- **NORMAL AUDIO BUTTON/INDICATOR LIGHT**
Push this button so that indicator lights for NORMAL AUDIO sound playback.

- **HI-Fi AUDIO BUTTON/INDICATOR LIGHT**
Push this button so that indicator lights for Hi-Fi AUDIO sound playback.

DESCRIPTION OF CONTROLS (CONTINUED)

PUSH BUTTON CONTROLS

• REWIND/SEARCH ◀◀ BUTTON

Push this button to rewind tapes. "REW" and "◀" appear on the Multi Function Display. During the playback mode, holding this button down will allow you to view the picture in reverse rapidly. "◀" flashes.

• PLAY BUTTON

Push this button to play back recorded tapes. "PLAY" and "▶" appear on the Multi Function Display.

• FAST FORWARD/SEARCH ▶▶ BUTTON

Push this button to move the tape forward rapidly. "FF" and "▶" appear on the Multi Function Display. During the playback mode, holding this button down will allow you to view the picture in the forward direction rapidly. "▶" flashes.

• RECORD BUTTON

Recording is started by pushing this button and the PLAY Button at the same time. "REC" and "▶" appear on the Multi Function Display.

• PAUSE/STILL BUTTON

Push this button to temporarily stop the tape movement in either the recording or playback mode. During playback a still picture is produced when the pause is used. Push again to release pause. When this button is pushed, "PLAY" and "■" appear on the Multi Function Display.

• AUDIO DUB BUTTON

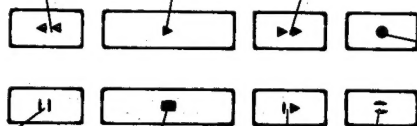
When this button and PLAY Button are pushed simultaneously, sound from another source can be recorded on the tape in place of the original sound.

• SLOW BUTTON

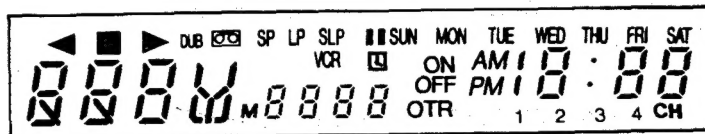
While viewing a still picture, push this button to advance the picture one frame at a time. "▶" flashes. During the playback mode, pushing this button will allow you to view a slow-motion picture. "SLOW" appears on the Multi Function Display.

• STOP BUTTON

Push this button to stop the tape. "■" appears on the Multi Function Display.



MULTI FUNCTION DISPLAY



- **DIGITAL CLOCK**

Normally, the present time is displayed.

- **TAPE COUNTER**

Tape counter number is displayed.

- **FUNCTION INDICATOR "g88W"**

This shows the mode of VCR (EJECT, PLAY, REC, REW, FF, PAUSE, STILL, SEARCH, STOP, FRAME ADVANCE, SLOW).

- **DEW INDICATOR "88W"**

This indicator appears if excessive moisture condenses in the unit. If the DEW Indicator is ON, the unit will not operate. If this happens, leave the VCR ON and let it remain at room temperature until this indicator goes off.

- **TIMER INDICATOR "T"**

When TIMER Button is set to ON, this indicator appears and you will not be able to operate the unit manually.

- **PROGRAM NUMBER "1", "2", "3", or "4"**

This shows the program number for Timer Recording.

- **CHANNEL INDICATOR "CH"**

This indicator flashes when selecting channel for Timer Recording.

- **O.T.R. INDICATOR "OTR"**

When OTR is set, this indicator appears.

- **MEMORY INDICATOR "M"**

When MEMORY Button is set to ON, this indicator appears.

- **DUBBING INDICATOR "DUB"**

When audio dubbing is set, this indicator appears.

- **VCR/TV INDICATOR "VCR"**

This indicator appears when the VCR/TV Selector is set to VCR.

- **SPEED INDICATOR "SP", "LP", "SLP"**

This shows the tape speed during recording and playback.

- **CASSETTE-IN INDICATOR "C"**

This indicator shows the condition of the cassette tape in the unit.

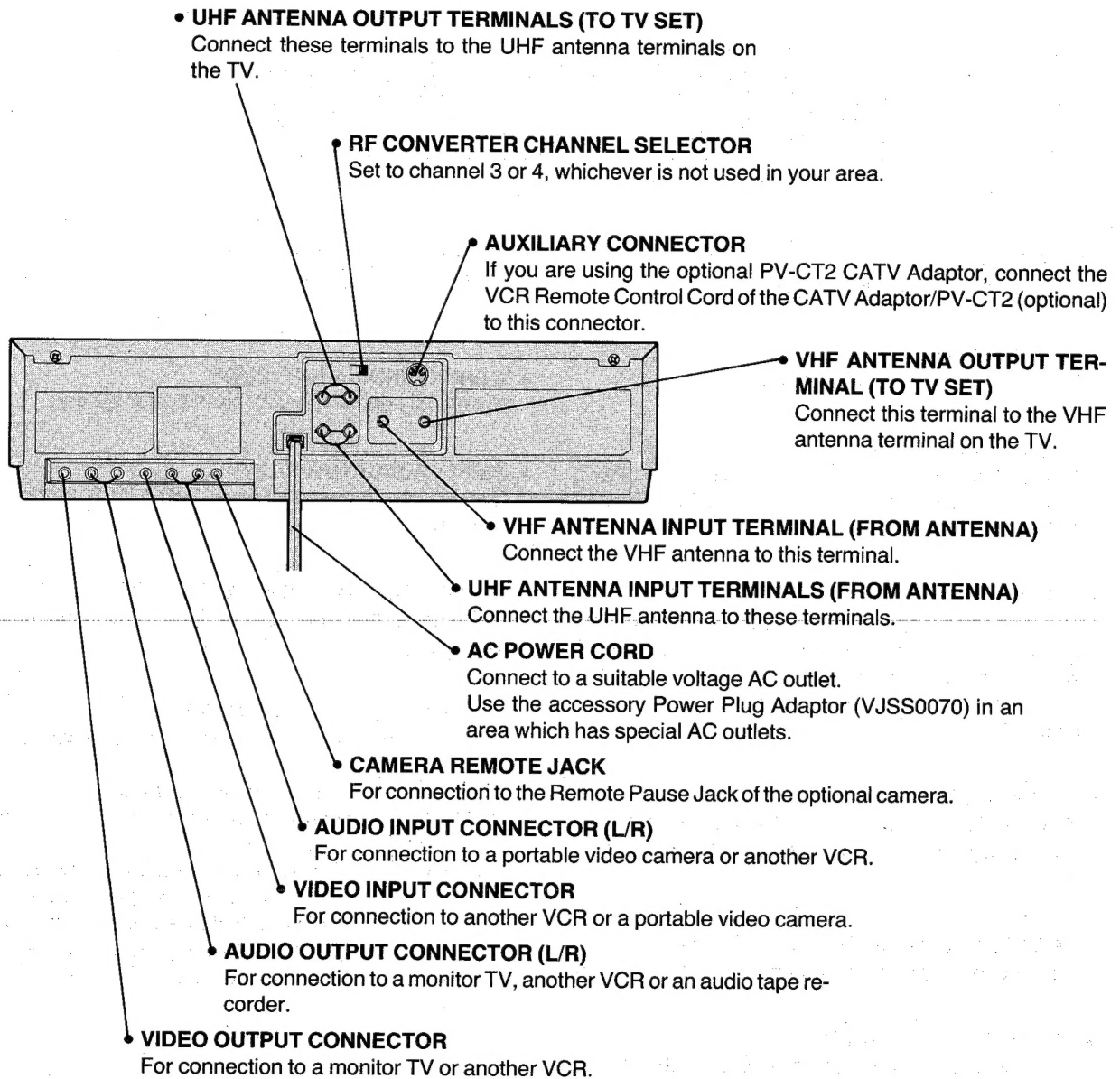
No "C": There is no cassette in the unit.

"C": There is a cassette in the unit and some interval to the end of the tape.

Flashing "C": The automatic rewind took place at the end of tape during playback, recording or fast forward. The indicator continues flashing until the subsequent mode is set.

DESCRIPTION OF CONTROLS (CONTINUED)

REAR



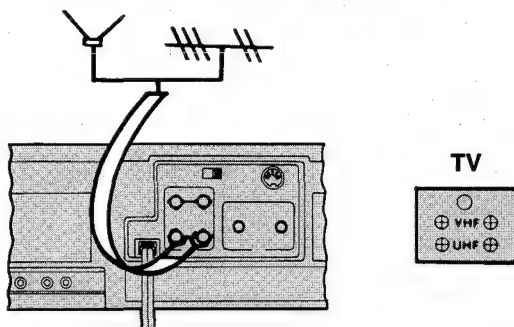
In some cases, the product may differ slightly from illustrations or photographs. Please be assured that this difference is not due to mistake but to ongoing product improvement.

UHF AND VCR PLAYBACK CONNECTIONS

If you receive UHF TV broadcasts, connect TV antennas to the VCR and TV as shown below.

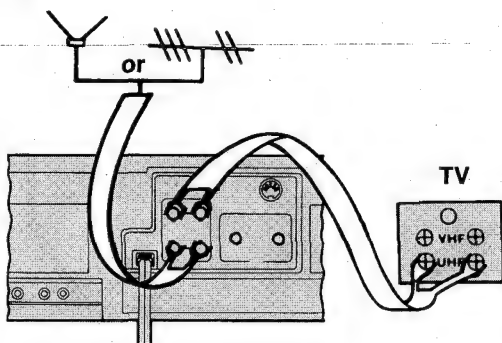
UHF CONNECTION

① Indoor or outdoor UHF antenna



- Remove the UHF antenna twin lead wires from the back of your TV, and attach these wires to the UHF IN terminals of the VCR.

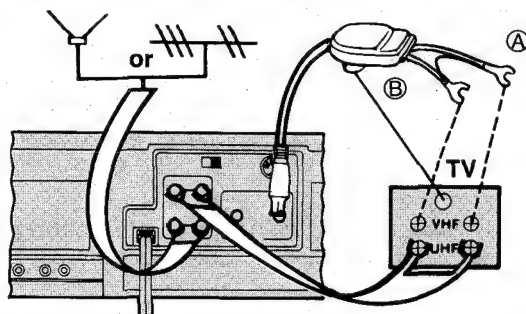
②



- Attach the Twin Lead (flat) Cable (supplied) to the UHF OUT terminals of the VCR.
- Attach the other end to the UHF terminals of the TV.

If you receive only UHF Channels, you must also add one of the following two connections ③ or ④ between your VCR and TV. This connection is necessary to view tapes in playback and to use your TV as a monitor.

- If you have only screw type VHF terminals on your TV, use connection ③. If using connection ③, set the switch of the VHF Connecting Cable to lower ($300\ \Omega$) position.
- If you have a VHF terminal on your TV, use connection ④. If using connection ④, set the switch of the VHF Connecting Cable to upper ($75\ \Omega$) position.



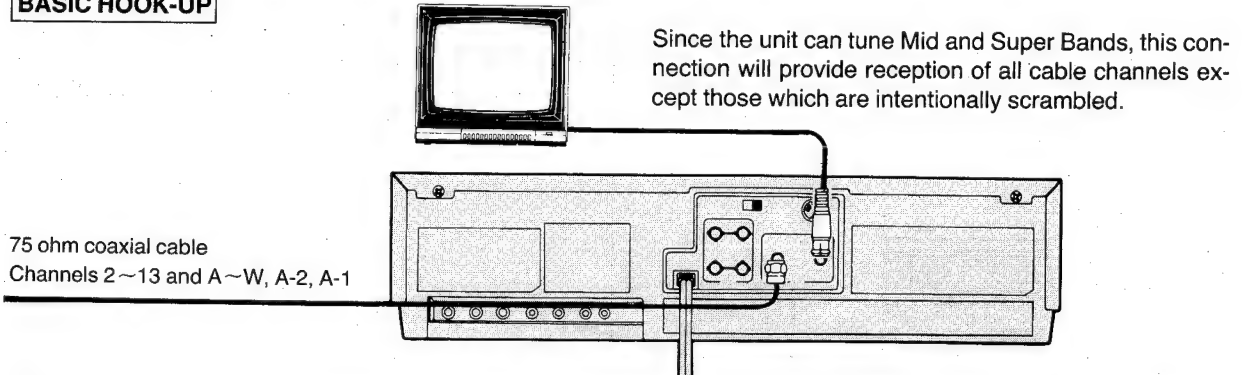
- Attach the VHF Connecting Cable (supplied) to the VHF OUT terminal of the VCR.
- Attach the other end of the cable to the VHF terminal of the TV (connection ③) or the VHF antenna terminals of the TV (connection ④).

CABLE CONNECTIONS

CABLE-VCR-TV (FOR CATV/PAY CHANNELS RECORDING/PLAYBACK)

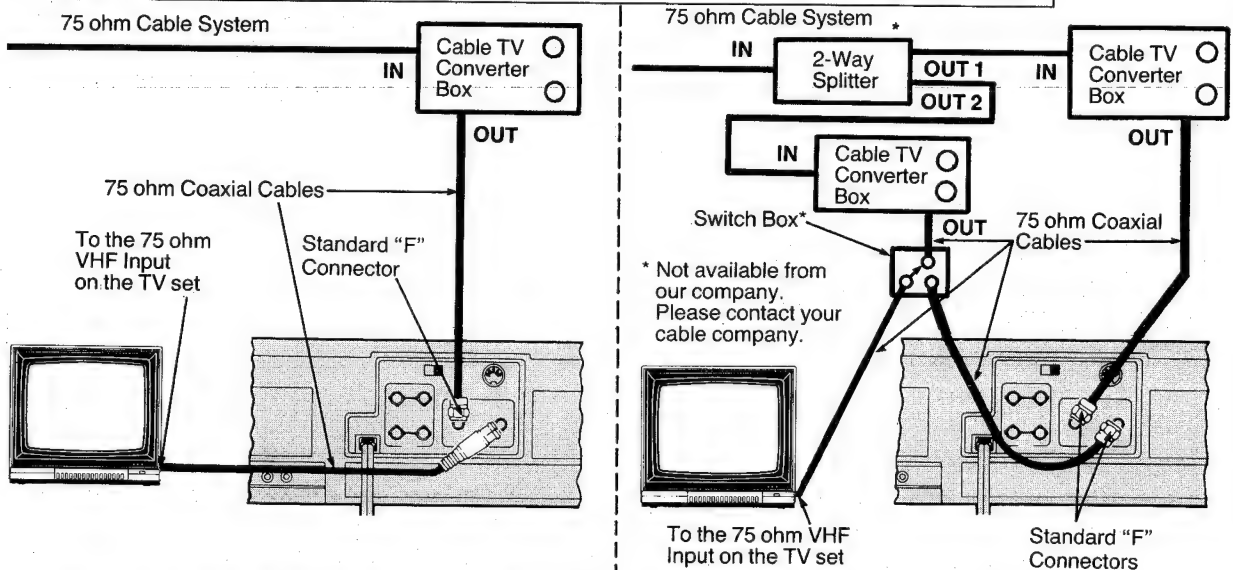
The unit has an extended range, and can tune the Mid-Band and Super-Band cable channels. (Channels A~W, A-2, A-1). Also, the unit can tune to any of the 70 UHF channels (14~83). Refer to VCR FINE TUNING.

BASIC HOOK-UP



However, if you subscribe to a special channel which is scrambled—you probably have a descrambler box for proper reception. The PV-1631M by itself cannot properly receive a scrambled program since it does not contain a descrambler. In order for the PV-1631M to properly receive a scrambled program, your existing descrambler must be used. There are two commonly used methods of connection in this case.

TYPICAL CABLE SYSTEM HOOK-UPS WITH CABLE CONVERTER/DESCRAMBLER BOXES



The above cable hook-up allows VCR-TV functions except for viewing one channel while recording another.

The above cable hook-up allows VCR-TV functions, including viewing one channel while recording another, but it requires two cable TV Converter Boxes, one Switch Box and one 2-Way Splitter.

Since the PV-1631M has an extended range of tuning, tuning-programming of non-scrambled Mid-Band and Super-Band TV programs is possible. When a cable converter or descrambler box is connected to the unit, all Unattended Recording functions will continue to operate with the exception of changing channels automatically. Channel selection will have to be performed with the cable converter. Unattended Recording is therefore limited to one channel at any given time.

- Using the CATV Adaptor/PV-CT2 and the cable descrambler box:

All functions (e.g. Timer Recording, Recording one channel while watching another) will be operable for both regular TV channels and one pay TV channel. If you use the PV-CT2, refer to the Operating Instructions of the PV-CT2.

Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

GLOSSARY OF TERMS

ACC

Automatic Color Control used to maintain an overall constant color signal level in the color circuits.

ACK

Automatic Color Killer.

Adjacent Track

This is the name of the video track to the immediate left or right of the track of concern.

AFC

Automatic Frequency Control used to phase-lock the color circuits to either the recording or playback color signal, in order to achieve a stable color signal.

AFT

Automatic Fine Tuning... This is a special circuit found in most recent TV sets which makes the local oscillator of the TV tuner follow the channel of concern in order to produce a stable IF frequency. In other words, if for any reason the TV station being received changes frequency, the AFT circuit will automatically compensate so that no interference will be seen on the screen, i.e., no manual fine tuning is necessary.

AGC

Automatic Gain Control used to maintain an overall constant picture level in the luminance circuits.

APC

Automatic Phase Control used to help phase-lock the color circuits to either the recording or playback color signal in order to achieve a stable color signal.

Azimuth

A term used to describe the left to right tilt of the gap of a recording head, if it could be viewed straight on.

Balanced Modulator

A circuit so designed to give as an output the frequency sum or frequency difference of its two input signals. Any special characteristics of one of the input signals will be present in the output signal.

Beats

A term used to describe the unwanted signals produced when two original signals are allowed to be mixed together.

Bipolar PG

Pulse Generator signals that have both positive and negative excursions.

Burst

A short time occurrence (8 to 10 cycles) of the 3.58MHz subcarrier signal, appearing right after horizontal sync but centered on the blanking portion of the video waveform. Burst is used to keep the color oscillator of a TV receiver locked to the broadcast station.

B/W

Abbreviation for Black and White.

C

Capacitor.

C Signal

The color portion of a video signal.

Capstan

A small rotating metal dowel which drives the recording tape to assure positive tape movement.

Chroma

The color portion of a video signal.

Chrominance

The color portion of a video signal.

Clamp

The process of giving an AC signal a specific DC level.

Control Signal

A special signal recorded onto the video tape which is used during playback as a reference for the servo circuits.

Converted Subcarrier

This is the process of frequency shifting the color 3.58MHz subcarrier and its sidebands down to 629kHz.

Crosstalk

The name given to the unwanted signals obtained when a video head picks up information from an adjacent track.

CUE

To scan the playback picture at a faster than normal speed in the Forward direction.

D

Diode.

DL

Delay Line.

Dark Clip

After emphasis, the negative going spikes (undershoot) of a video signal may be too large in amplitude for safe FM modulation. A dark clip circuit is used to cut off these spikes at an adjustable level.

DDC

Direct Drive Cylinder... as used in VHS, this means that the video heads are driven by a self-contained brushless DC motor using no belts or gears. DD cylinders produce pictures with better stability.

Delta Factor (Δf)

A term used to indicate that a playback signal off the video tape has some jitter or "wow and flutter". Δf , or "a change in frequency" means that the color signal off the tape is not a stable frequency of 629kHz, but rather a signal whose frequency at any instant is some small amount above or below 629kHz.

Deviation

A term used to describe how far the FM carrier swings when it is modulated. In VHS the upper limit is 4.4MHz.

Dew Detector

A variable resistor whose resistance value depends upon the ambient humidity.

Dihedral

A term used to describe the relative position between the two video heads as they are mounted in the head cylinder. Perfect dihedral means that the tips of the heads are exactly 180° apart.

Dropout

A momentary absence of FM or color signal off the tape, whether due to uneven oxide or a coating of dust on the tape or video heads.

Duty Cycle

In describing a rectangular waveform, the "duty" refers to the percentage of off time and on time for one complete cycle. 50—50 means that there are equal periods of off time and on time for one cycle and this would be a square wave.

E-E

Electronics to Electronics...this is the picture viewed on the TV set when a recording is being made. This picture goes through some but not all of the circuits of the recorder and is used to test the operation of said circuits.

EQ

Shortened form of "Equalization", used in the audio circuits.

Emphasis

The process of boosting the level of the high frequency portions of the video signal.

FG

Frequency Generator used in the servo circuits.

FL

Filter.

FM Signal

The luminance portion of the video signal is used to control the frequency of astable multivibrator. The output of this multivibrator is a frequency modulated (FM) signal shifting from 3.4MHz to 4.4MHz (plus sidebands).

Field

One half of a television picture. A field consists of 262.5 horizontal scanning lines across the picture tube. Two fields are necessary to complete a fully scanned TV picture (frame). First, one field is "sprayed" on the picture tube, starting at the top of the tube with Line 1, and ending at the bottom with Line 262.5. Then, the next field begins at the top of the tube again with Line 262.5 and ends at the bottom with Line 525. The lines of the second field lie in-between the lines of the first field. This property of falling in-between lines is called "interlacing". The two sweeps of the picture tube, or two fields make up one complete TV picture of "frame". Frame repetition is 30Hz, therefore field repetition is 60Hz.

Flagwaving

This is the term used to describe a TV set's ability to accept unstable playback pictures from a video tape recorder. All home VTR's have some degree of playback instability. A TV set with a long horizontal AFC time constant may not recover from the VTR's instability before the active picture is being scanned. This can cause a bending or flapping from side to side of the top inch or so of the screen. This movement is called "flagwaving".

Frame

One complete TV picture. See "Field".

Gate

A circuit which will deliver an output only when a specific combination of its inputs are present. For use in analog or digital applications.

Guard Band

This is the space between video tracks on the video tape in the SP mode. Guard bands contain no information.

Hall Effect IC

An external magnetic field causes current to flow in this type of device.

HD

Horizontal Drive signal.

Head Cylinder

A cylindrical piece of metal which houses the video heads. The tips of the heads protrude slightly from the surface of the cylinder so that they may scan the tape as the cylinder spins.

Head Switching

The action of turning off during playback, the video head which is not in contact with the video tape. A particular video head will be turned off 30 times per second. This is done so that the head which is not scanning the tape, and therefore not delivering a good signal, cannot contribute any noise to the playback signal.

Head Switching Pulse

The signal which is applied to the Head Amplifier to perform head switching. This is a square wave at 30Hz, with a 50—50 duty cycle.

Helical

A word used to describe a general type of VTR in which the tape wraps around the video head cylinder in the shape of a 3-dimensional spiral, or "helix". The video tracks are recorded as a series of slanted lines.

IC

Integrated Circuit.

Interchangeability

A term used to describe how well a particular VTR will play back a tape recorded on another VTR of the same type. Good interchangeability indicates good playback.

Interlacing

The property of the scan lines of two television fields to lie in-between each other. See "Field".

Interleaving

A term used to indicate that the harmonics of the chrominance signal lie in-between the harmonics of the luminance portion of the video signal as it is viewed on a spectrum analyzer. This means that the color information of a video signal does not interfere with, although it is broadcast at the same time as, the luminance information.

Also, signals which have this interleaving property are not readily seen on a TV screen, because of their virtual cancellation characteristics.

Interleaving signals (fi) must have the following frequency relationship:

$$f_i = \left(\frac{2n+1}{2} \right) \times f_H \quad (n = 0, 1, 2, 3, 4, \dots)$$

$$f_H = 15,734 \text{ Hz (H sync frequency)}$$

Jitter

The name of the effect on the playback picture if a VTR has too much "wow and flutter". The picture appears to have a rapid shaking movement.

L

Coil.

Luminance

This is the portion of video signal which contains the sync and B/W information.

MMV

Monostable Multi-Vibrator...Usually an IC device which gives a logic high or low output with a variable duration upon receipt of an input pulse or transition.

Non-Linear Emphasis

This is similar to regular emphasis with the difference that small level high frequency portions of the signal are given more of a boost than higher level high frequency portions.

NTSC

The National Television Systems Committee. These four letters identify the United States color television standard.

O.T.R.

One Touch Recording (O.T.R.) enables you to do impromptu timer recordings at any time. When you have to go out for urgent matters or you are going to sleep, this function is very useful. Just select the channel and push the O.T.R. Button for 30 minutes to 2 hours of recordings. After recording, the VCR will be turned off automatically.

PG

Pulse Generator used in the servo circuits.

Q

A term used to describe the graphic response of a filter or tuned amplifier.

R

Resistor.

Review

To scan the playback picture at a faster than normal speed in the Reverse direction.

RF

Radio Frequencies.

Rotary Chroma

The name of the process used in VHS to change the phase of the chrominance signal at a rate of 15,734 (same as H sync frequency) times per second.

Rotary Transformer

A device used to magnetically couple RF signals to and from the spinning video heads, thus eliminating the need for brushes.

Sample and Hold

A process used in comparator circuits by which the value of a particular signal is measured at a specific moment in time...then this value is stored for later use.

Search

To scan the playback picture at a faster than normal speed in either the forward or reverse direction.

Servo

Short for Servo mechanism. This is an electro-mechanical device whose mechanical operation (for instance motor speed) constantly being measured and regulated so that it closely matches or follows an external reference.

Skew

Another way of saying Tension Error. Skew is actually the change of size or shape of the video tracks on the tape from the time of recording to the time of playback. This can occur as a result of poor tension regulation by the VTR, or by ambient conditions which affect the tape.

Subcarrier

The name of the 3.58MHz continuous wave signal used to carry color information.

SS

Slow and Still.

T

Transformer.

TP

Test Point.

TR

Transistor.

Tension Error

See "Skew".

Time Base Stability

A term used to describe how closely the playback video signal from a VTR matches an external reference video signal...in regard to sync timing rather than picture content.

Tracking

This is the action of the spinning video heads during playback when they accurately track across the video RF information laid down during recording. Good tracking indicates that the heads are positioning themselves correctly, and are picking up a strong RF signal. Poor tracking indicates that the heads are off track, and picking up low level RF signal or noise.

VCO

Voltage Controlled Oscillator...An oscillator whose frequency of oscillation is governed by an external voltage.

Video Head

This is the electro-magnet used to develop magnetic flux which will put RF information on the tape. In VHS, two video heads are mounted in a rotating cylinder around which the video tape is wrapped. As the cylinder spins, each video head is allowed to alternately scan the tape.

Video Track

The name of the RF information laid down during recording, as a particular video head scans across the tape.

VHS

Video Home System.

VTR

Video Tape Recorder.

VV

Video to Video...or...the actual playback picture produced from a tape during playback.

VXO

Voltage Controlled Crystal Oscillator...Similar to VCO except that a quartz crystal is used as a reference which can be varied.

White Clip

After emphasis, the positive going spikes (overshoot) of the video signal may be too large for safe FM modulation. A white clip circuit is used to cut off these spikes at an adjustable level.

XTAL

Abbreviation for crystal.

Y Signal

The B/W portion of a video signal containing B/W information and sync.

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IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.
4. USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{M}\Omega$ and $5.2\text{M}\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

LEAKAGE CURRENT HOT CHECK (See figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5\text{k}\Omega$, 10 watts resistor, in parallel with a $0.15\mu\text{F}$ capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

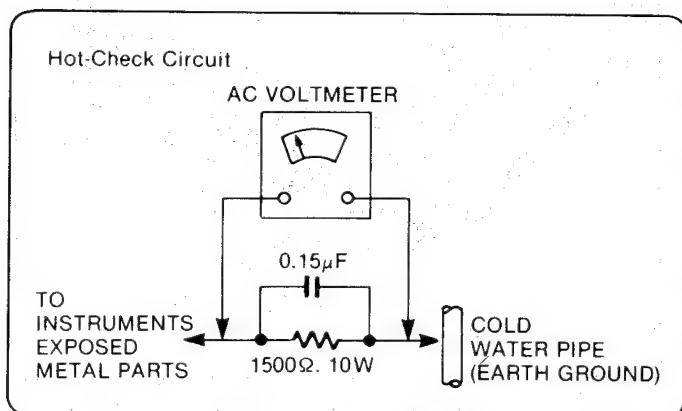


Figure 1

MECHANICAL ADJUSTMENT PROCEDURES

1. DISASSEMBLY OF CABINET PARTS

1. DISASSEMBLY FLOWCHART

This flowchart indicates disassembly steps of the cabinet parts and the P. C. Boards in order to find the item(s) necessary for servicing. When reassembling, perform the step(s) in the reverse order. Bottom Plate can be removed separately.

Note:

1. When removing the front panel, work with care so as not to break the locking portions of the panel.
2. The 3 screws indicated by arrow marks on the bottom plate should be removed to remove the top case.

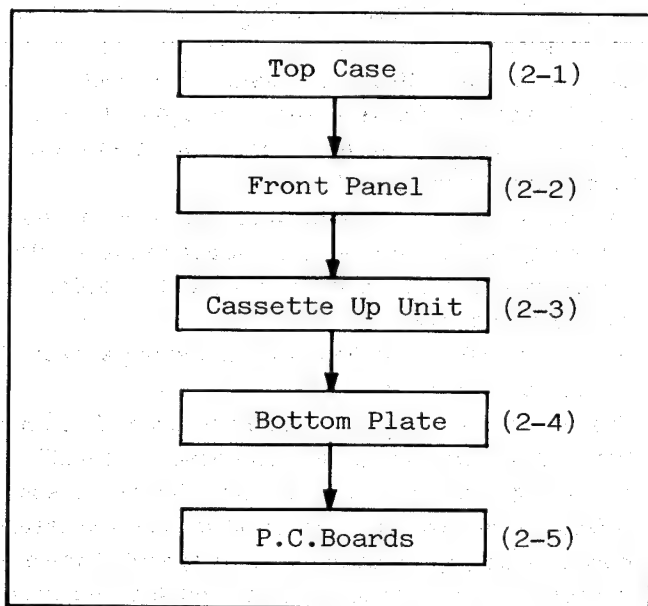


Fig. M1 Disassembly Flow Chart

2. DETAILED DISASSEMBLY METHOD

2-1. Removal of the Top Case

Place the deck so that the left side faces down, hold the deck with your hand and remove 3 screws (A).

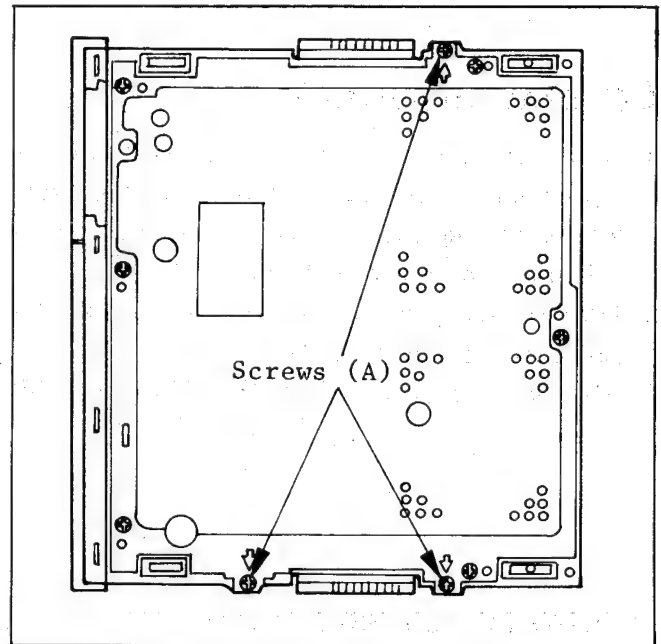


Fig. M2-1 Removal of Top Case

Remove 2 screws (B).

Then pull the top case toward the back and then carefully lift the front portion to remove.

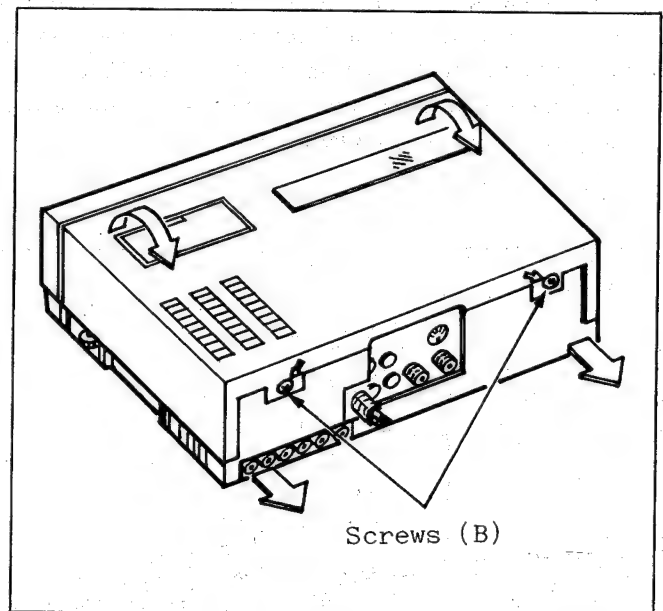


Fig. M2-2 Removal of Top Case

2-2. Removal of the Front Panel

Release 3 locking tabs. Then hold both right and left top portions of the panel and turn it towards the front of deck to remove.

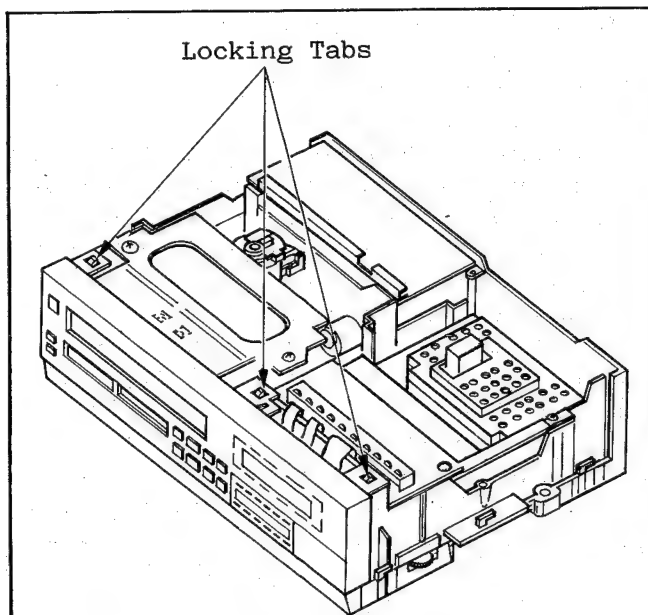


Fig. M3 Removal of front Panel

2-3. Removal of the Cassette Up Unit

Remove 3 Screws (C) and unplug the connector P1551 on Connection C.B.A. Then remove Cassette Up Unit. First slightly lift the left side of Cassette Up Unit and then lift right side of Cassette Up Unit.

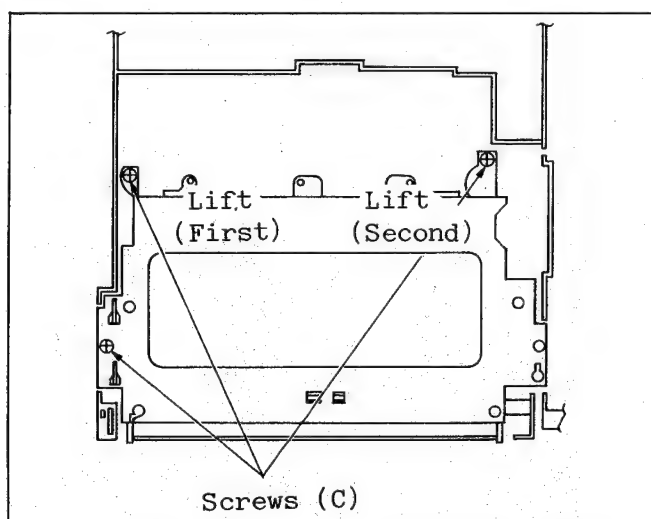


Fig. M4-1 Removal of Cassette Up Unit

2-3-1. Cassette Holder Down Position without Cassette Tape

The cassette Holder in down position without cassette tape should be done according to the following procedures for some adjustments.

1. Turns the power sw ON.
2. Insert 2 screwdrivers into the Cassette Up Unit from the front, positioning them right and left, as shown in (A) and (B) in Fig. M4-2. The screwdrivers should keep both side holder guide levers in the unlock position. By pushing down while pushing toward the rear on the Holder unit, the loading action will begin. Continue this pressure and screwdriver position until the Cassette Holder Unit clears the 3 locking tabs. After clearing the locking tabs the Cassette Up unit will move into the down position by itself.

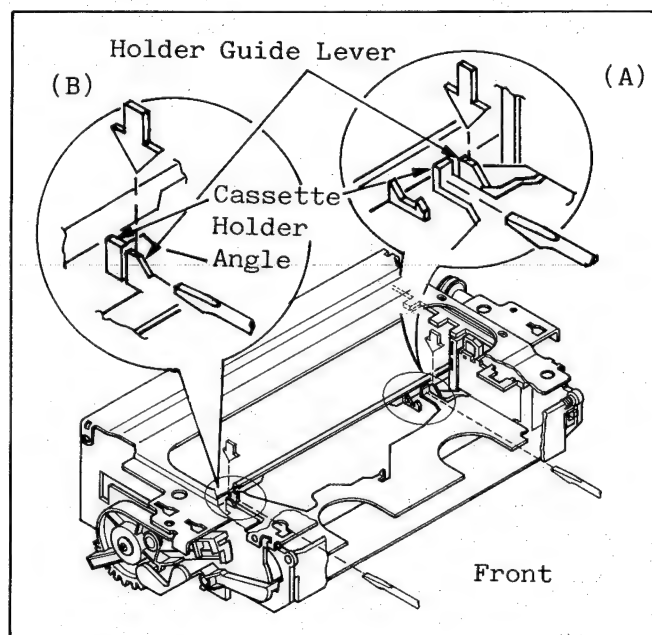


Fig. M4-2 Cassette Down Condition Without Cassette Tape

3. Connect TP6005 and GND on System Control Section through a jumper wire.
4. After the adjustment, remove the jumper wire.

Note :

When TP6005 and GND are connected through a jumper wire, Eject can be performed but not Cassette Loading.

2-4. Removal of the Bottom Plate

Place the deck so that the left side faces down, hold the deck with your hand and remove 6 screws (D).

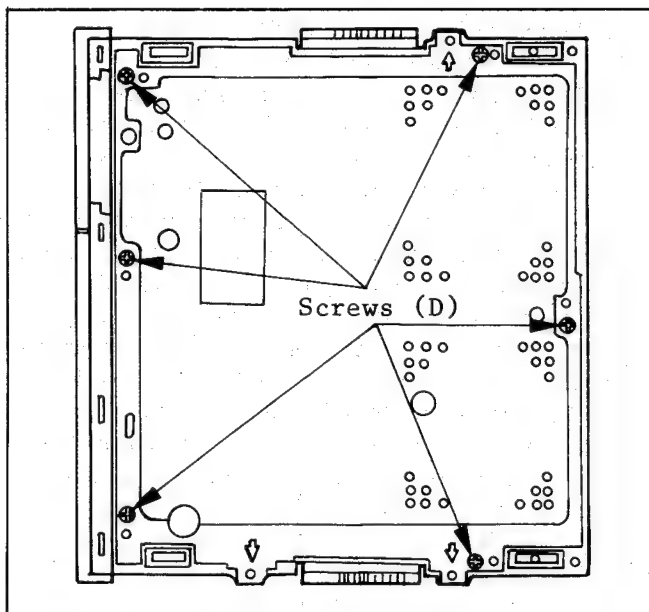


Fig. M5 Removal of Bottom Plate

2-5. Opening of the P.C. Boards (Bottom, Signal Process)

Place the deck so that the left side faces down, hold the deck with your hand.

2-5-1. Main C.B.A.

Remove 5 red screws (E) and a Locking Tab. Then open the Main P.C. Board.

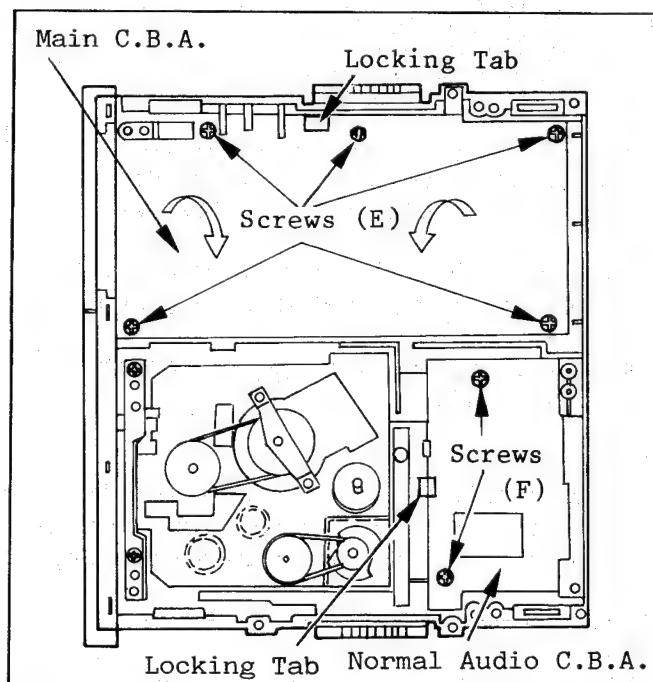


Fig. M6 Opening of P.C. Board

2-5-2. Signal Process C.B.A.

1. Disconnect the AC plug from the AC outlet.
2. Place the deck so that the left side faces down, hold the deck with your hand and remove 2 screws (F) and a locking tab on the Normal Audio C.B.A. Then open the Normal Audio C.B.A.
3. Remove the screw and jumper on the U/V Tuner Unit from bottom side.
4. Remove the 5 red screws (G).
5. Lift Signal Process C.B.A. Slightly and then turn the C.B.A. to set it as shown in Fig M8.
6. Remove the Top Cover Support Angle.

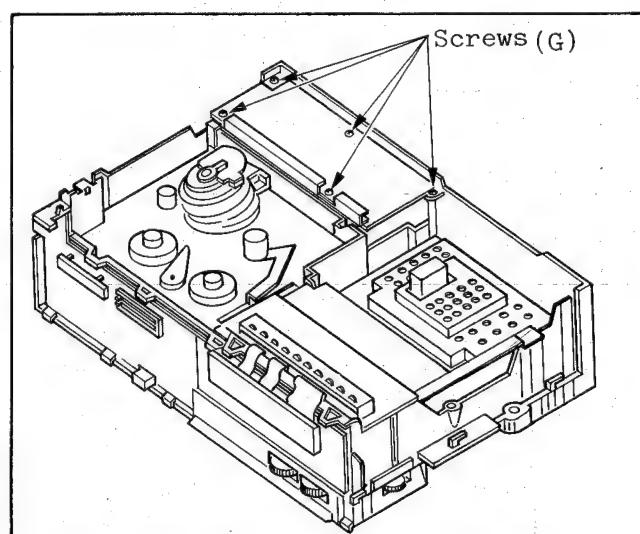


Fig. M7 Opening of P.C. Boards

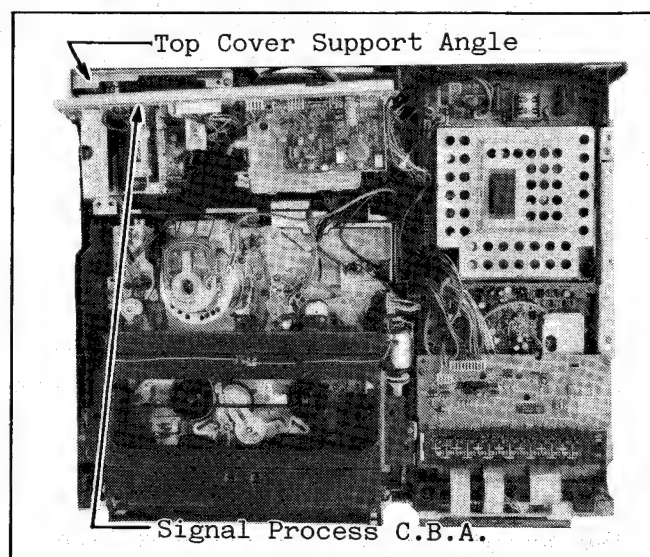


Fig. M8 Setting of Signal Process C.B.A.

Note :

Be careful lest the surrounding wires should be damaged.

2. PROCEDURE FOR CLEANING OF UPPER CYLINDER UNIT

1. Position the Video Head or FM Audio Head to permit access for cleaning and hold the upper cylinder to keep it from turning while cleaning.
2. Gently rub the Video Head or FM Audio Head in direction of tape travel with Head Cleaning Stick (VFK27) moistened with Freon TF.
3. Repeat for the other Video Head and FM Audio Head.

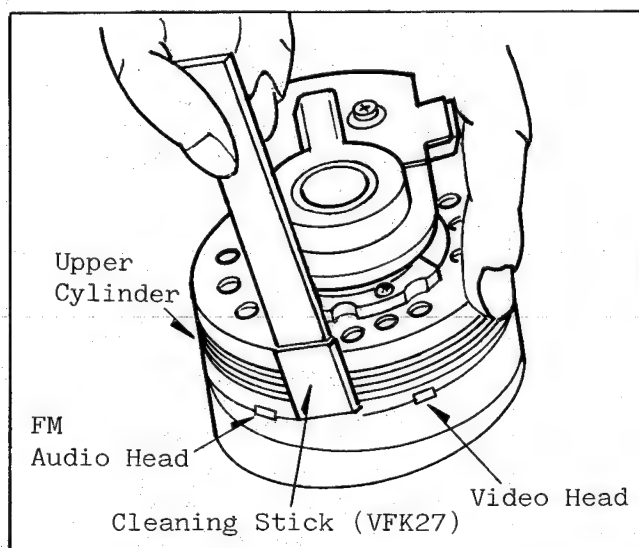


Fig. M9 Head Cleaning

Note :

1. Do not rub vertically.
2. Do not apply any pressure to head.
If contaminant is not easily removed, continued gentle wiping will usually remove the substance.

3. ADJUSTMENT PROCEDURES

1. REPLACEMENT OF UPPER CYLINDER UNIT

Work with extreme care when removing or replacing the Upper Cylinder Unit. Do not touch Video Heads and FM Audio Heads during servicing.

1. Remove the stator Angle Unit by removing 2 screws (A).

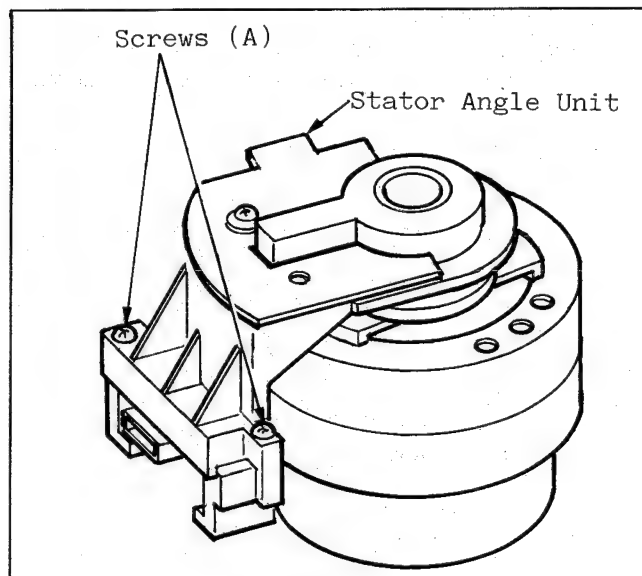
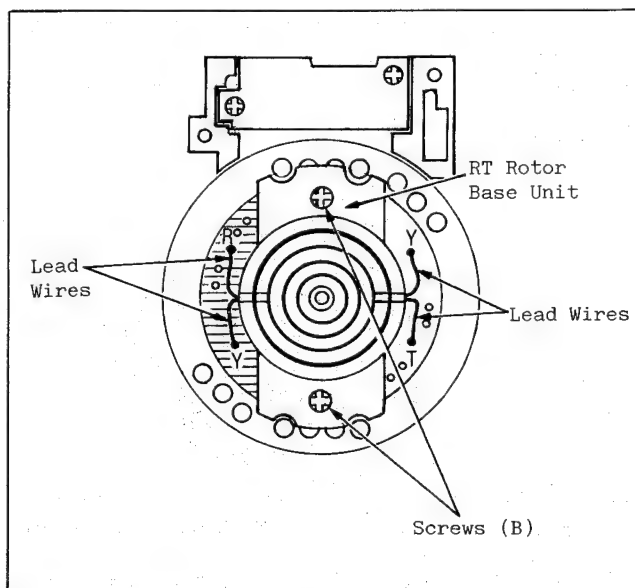


Fig. M10-1

2. Unsolder the 4 Lead wires which are color coded to matching marks (Y,R,T,Y) on the head relay board.
3. Remove the 2 screws(B) and gently lift the RT Rotor Base Unit from the Upper Cylinder Unit.



Color of Lead Wires	mark on head relay board	Color of Lead Wires	mark on head relay board
RED	R	YELLOW	Y
YELLOW	Y	BROWN	T

Fig. M10-2

4. Unsolder the 8 lead pins on the head relay board which are indicated by the arrows \Rightarrow .
5. Remove the 2 screws (C) and gently lift the Upper Cylinder Unit from the shaft.

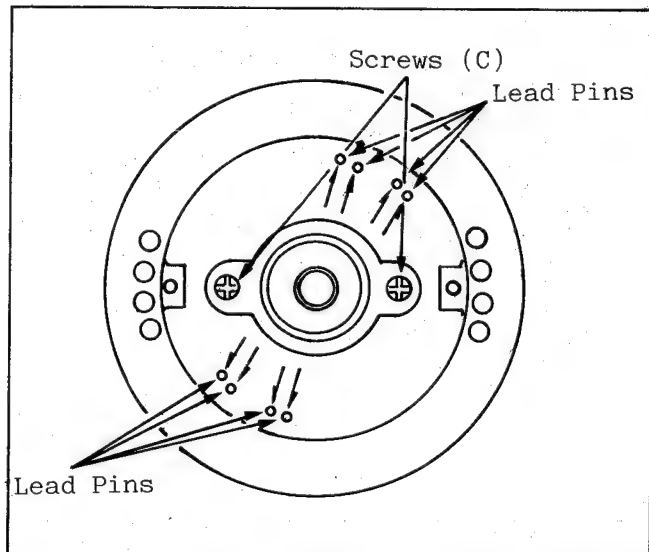


Fig. M10-3 Replacement of Upper Cylinder Unit

6. Before reinstalling a new unit, clean the D.D. Cylinder shaft and the surface that it engages with on the Upper Cylinder with a soft cloth dampened with Freon TF.

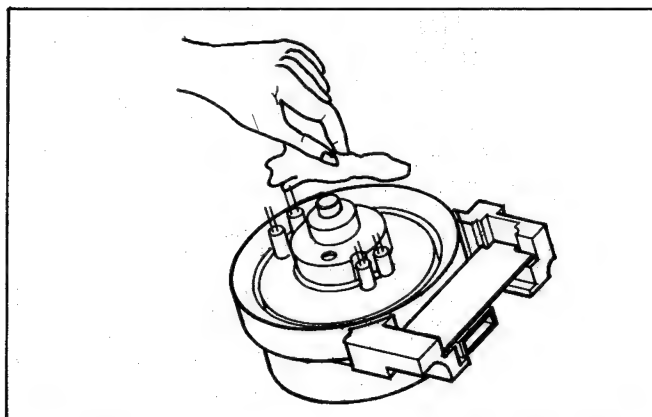


Fig. M10-4 Replacement of Upper Cylinder Unit

7. Install new Upper Cylinder Unit carefully so that the 8 lead pins are properly matched to the Head Relay Board.
- For details on the installation position, refer to Fig. M10-5.

Note :

Install the 8 lead pins with extreme care so as not to damage them.

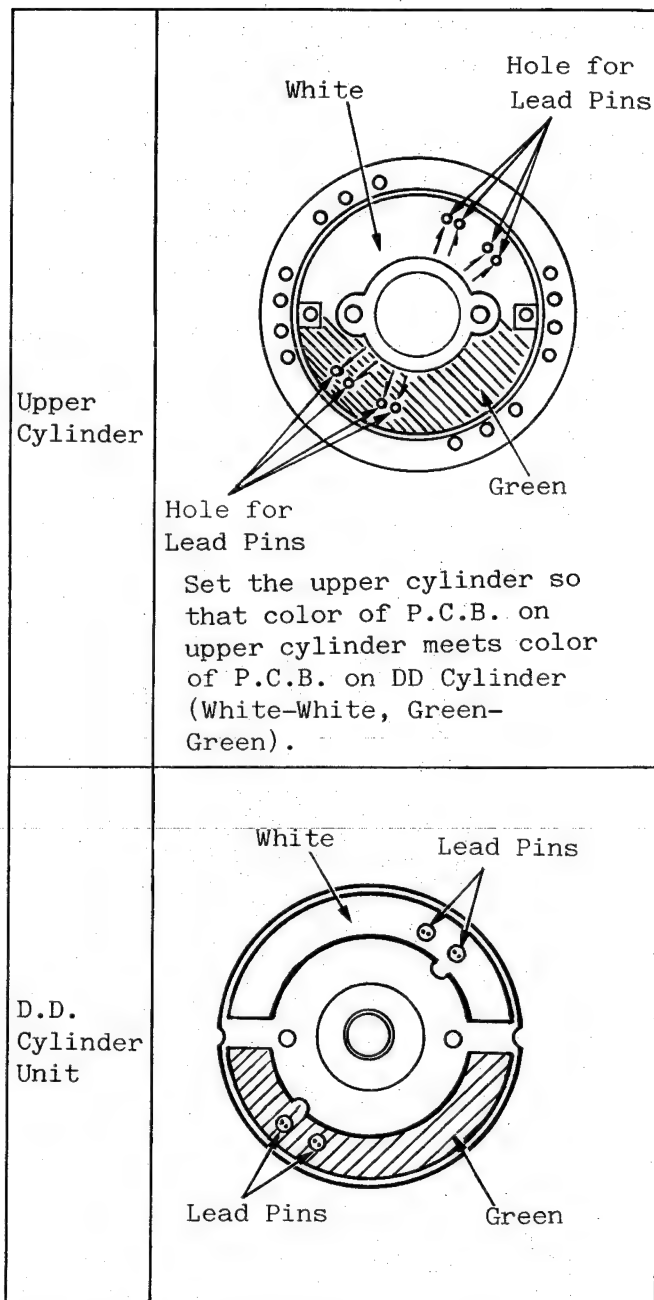


Fig. M10-5 Replacement of Upper Cylinder Unit

8. Tighten the 2 screws (C) and resolder the 8 lead pins to the head relay board.
9. Next reinstall the RT Rotor Base Unit by refastening the 2 screws (B).
10. Matching them to their proper marks. Resolder the 4 color coded wires to the head relay board (yellow wires to Y marks, red wire to R mark, brown wire to T mark) as shown in Fig. M10-2.

11. Install the stator Angle Unit with 2 screws(A) as shown Fig. M10-1 and adjust the position of the Stator Angle Unit.
12. Clean the Upper Cylinder with a deerskin swab saturated with Freon TF.

Note:

Upon completion of replacement, confirm performance. And if required, perform "TAPE INTERCHANGEABILITY ADJUSTMENT".

2. POSITION ADJUSTMENT OF STATOR ANGLE UNIT

1. Loosen 2 screws(A).
2. Adjust the position of the stator Angle Unit so that the hole of the stator Angle Unit is centered with RT Rotor Boss.

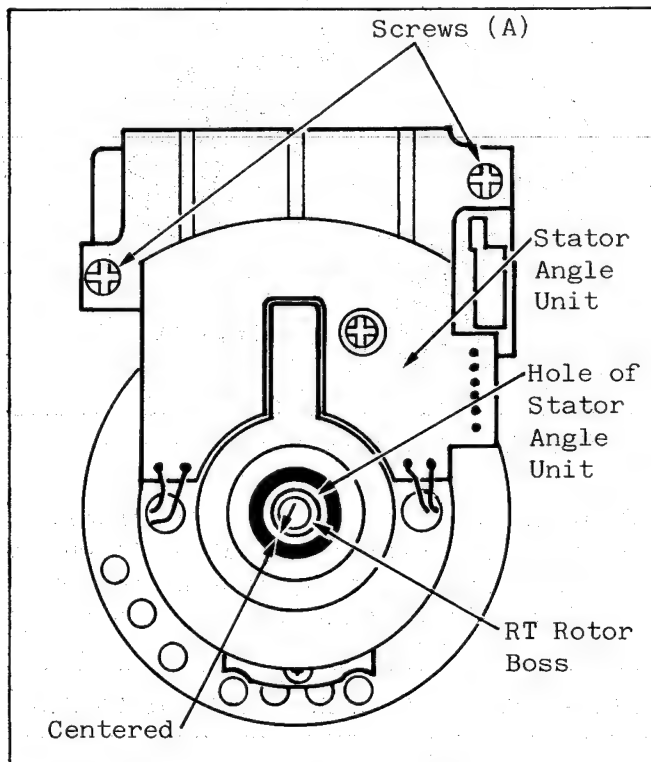


Fig. M11 Position Adjustment of Stator Angle Unit

3. REPLACEMENT OF D.D. CYLINDER UNIT

Work with extreme care when removing or replacing the D.D. Cylinder Unit. Do not touch video heads during servicing.

1. Disconnect connector (P1503) from the Stator Angle Unit.
2. Disconnect 2 connectors (P1501 and P1502) from the D.D. Cylinder Unit.
3. Remove screw (A) and discharge angle unit.
4. Remove the D.D. Cylinder Unit by removing 3 screws (B).

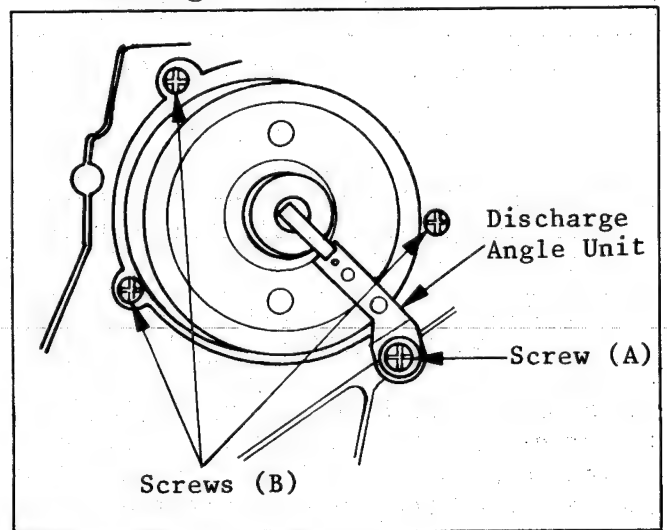


Fig. M12-1 Replacement of D.D. Cylinder Unit

Note :

Since there is very little clearance between D.D. Cylinder Unit and chassis, remove the D.D. Cylinder Unit gently and carefully.

5. Remove the Stator Angle Unit, RT Rotor Base Unit, Upper Cylinder Unit from the D.D. Cylinder and reinstall it on new one. To perform this step, refer to "REPLACEMENT OF UPPER CYLINDER UNIT" section.
6. Reinstall the new D.D. Cylinder Unit and connect P1501 and P1502. Reinstall connect P1503 and Discharge Angle Unit.

Note :

1. When reinstalling the new D.D. Cylinder Unit, fit the new D.D. Cylinder Unit to the chassis by turning it counterclockwise.

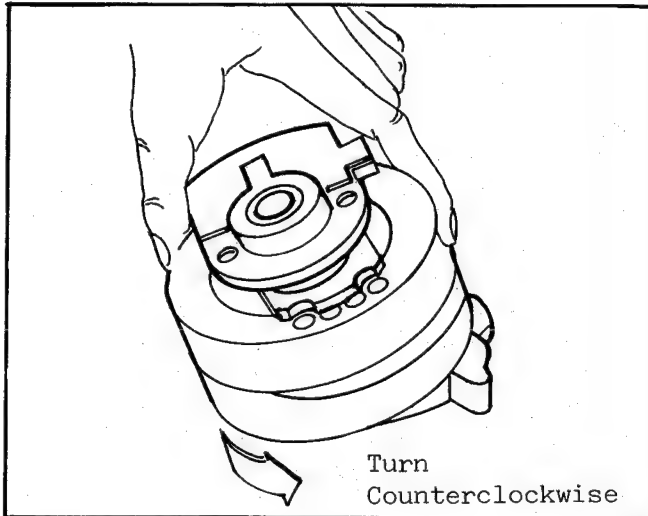


Fig. M12-2 Replacement of D.D. Cylinder Unit

2. Upon completion of replacement, confirm performance.
If any further maintenance is required, perform "TAPE INTERCHANGEABILITY ADJUSTMENT".

4. CONFIRMATION OF DISCHARGE ANGLE UNIT INSTALLATION POSITION

Check to see if the Discharge Angle Unit is correctly set in a position as close to 1mm as possible to the upper side from the center of the cylinder shaft as shown in Fig. M13.

Note :

Never install the Discharge Angle Unit to any position to the lower side from the center of the Cylinder shaft, but always within a maximum of 1mm to the upper side of the center of this shaft.

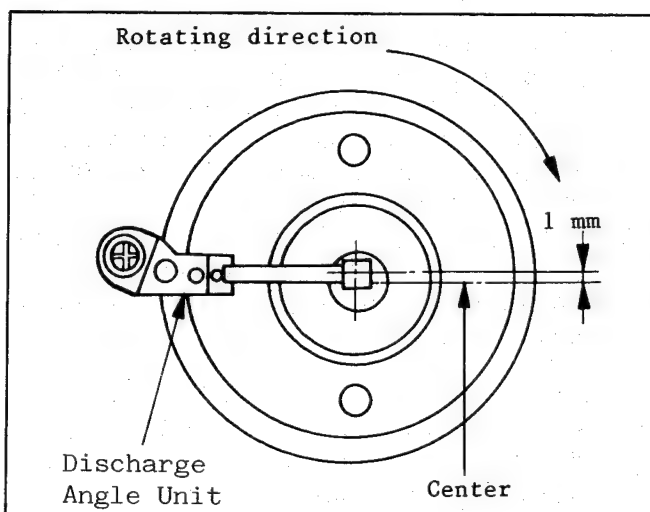


Fig. M13 Confirmation of Discharge Angle Unit Position

5. ADJUSTMENT OF V-STOPPERS

* Equipment Required:
V-Stopper Adjustment
Fixture(VFKS0029)

1. Remove the D.D. Cylinder Unit from chassis. (Stator Angle Unit does not need removal from the D.D. Cylinder Unit.) Refer to "REPLACEMENT OF D.D. CYLINDER UNIT" section.
2. Loosen 4 screws (A) and install the fixture.
Push the V-stoppers snugly against the pins and tighten the 4 screws (A).

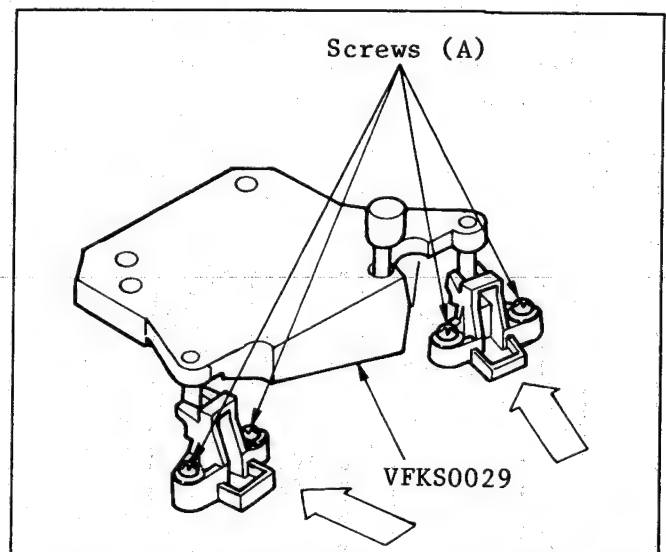


Fig. M14 Adjustment of V-Stoppers

3. Upon completion of the adjustment, simulate loading completion to ensure that posts smoothly fit the V-Stoppers.
Then reinstall the D.D. Cylinder Unit.

6. POSITION ADJUSTMENT OF TENSION POST

* Equipment Required:
Tension Post Adjustment Plate
.....(VFKS0002)
Fine Adjustment Screwdriver
.....(VFKS0136)

1. Remove the Top Case and Front Panel.
2. Put the Cassette Holder in down position without a cassette tape, referring to the procedures in 2-3-1 on page 2-3.
3. Push the play button for loading.

4. As soon as loading is completed, disconnect the AC plug and remove the Cassette Up Unit.
5. Loosen the screw slightly so that the tension band bracket can be moved in accordance with the procedure in item 7, but does not move when the screw driver is removed.
6. Place the adjustment plate.
7. Insert the fine adjustment screwdriver into the hole and move the tension band bracket right or left so that the tension post just touches the fixture.
8. Remove the adjustment plate and tighten the screw.
9. Replace the adjustment plate. Confirm that the tension post just touches the fixture.
10. Remove the jumper.

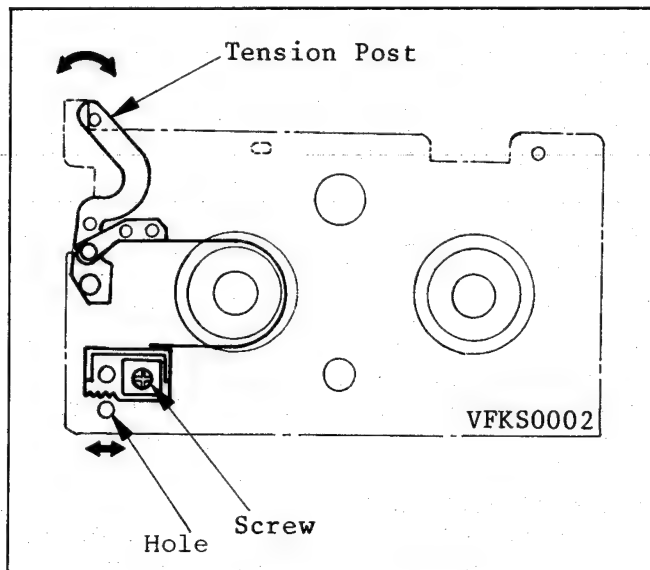


Fig. M15 Adj. of Tension Post

7. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

A: Measurement Procedure

* Equipment Required:

Back Tension Meter (Tentelometer, Model T2-H7-UM, Purchase Locally)
VHS Cassette Tape (120 Minute Tape)

* Specification: 25 - 30g

1. Remove the Top Case.
2. Pull the erase head in the direction indicated by the arrow and hold it with adhesive tape.

3. Playback the cassette tape from its beginning and wait until tape running has stabilized. (for approx. 10 to 20 seconds)
4. Insert Tension Meter in tape path and confirm reading.
5. If the reading is out of specification, perform the adjustment procedure.

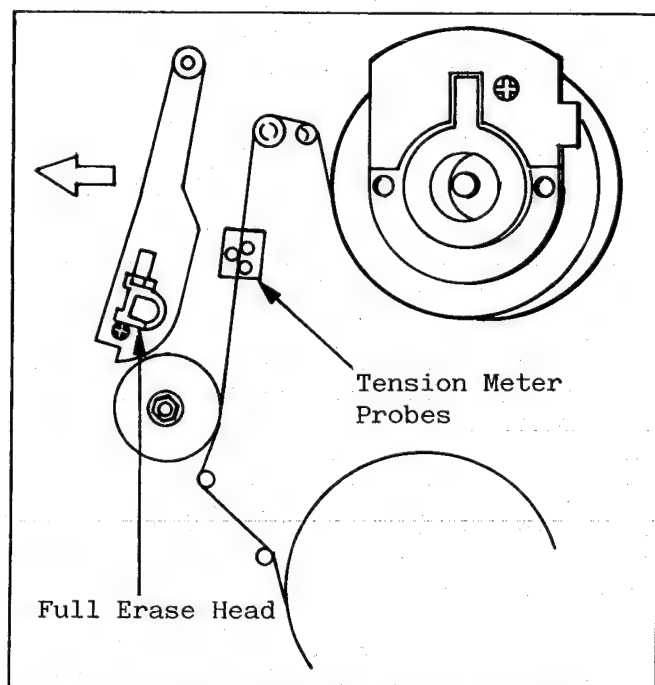


Fig. M16 Measurement of Back Tension

Note :

1. Make sure that the three probes of the meter are all in solid contact with tape, but out of contact with any other parts while measuring.
2. It is recommended that measurements be taken three times as tension meter is very sensitive.

B: Adjustment Procedure

* Equipment Required:

Fine Adjustment Screwdriver...(VFK0136)

1. Loosen screw (A) and insert the fine adjustment screwdriver into the hole (B).
2. Move the adjustment plate either direction as indicated by the arrow to obtain the specified tension. Turn the driver clockwise to loosen tension, counterclockwise to tighten tension.

3. Tighten screw (A) and verify tension with the meter once again.
4. Reinstall the cabinet parts.

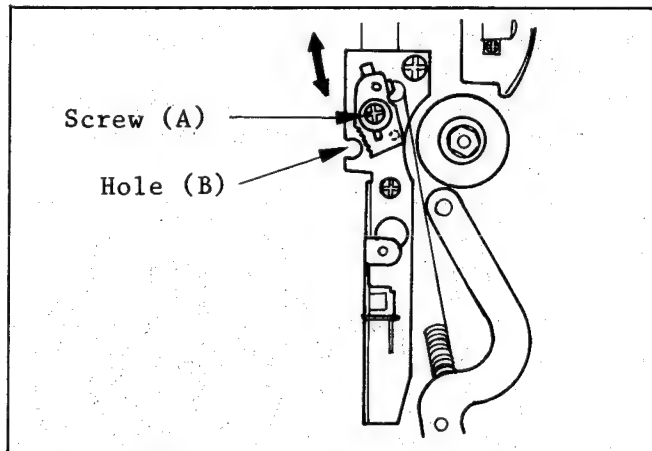


Fig. M17 Adj. of Back Tension

Note :

Upon completion of adjustment, remove the adhesive tape holding the erase head.

8. CONFIRMATION OF BRAKE TORQUE

A : Confirmation Procedure

*** Equipment Required:**

Dial Torque Gauge.....(VFK0133)
Adaptor for Gauge.....(VFK0134)

1. Remove the Top Case.
2. Put the Cassette Holder in Down position without a cassette tape, referring to the procedures in 2-3-1 on page 2-3.
3. Attach the adaptor to the torque gauge and place the deck in STOP mode.
4. Place the torque gauge on the reel table. The weight of gauge should not rest on the reel table.

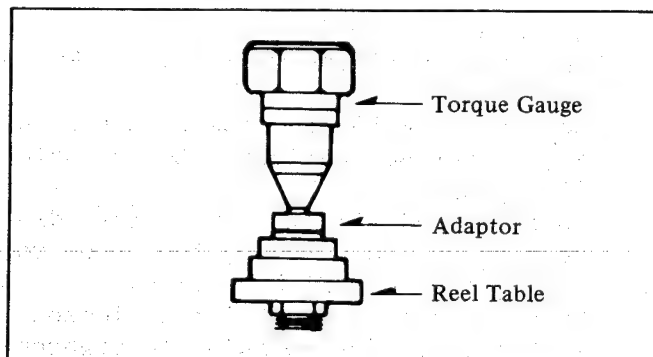


Fig. M18-1 Confirmation of Brake Torque

5. Turn torque gauge in either direction indicated in the Fig.M18-2 and read the gauge when the brake begins slipping.

Note:

If proper brake torque can not be obtained, clean the rotating surface of reel table with a soft cloth and recheck torque before replacing brakes.

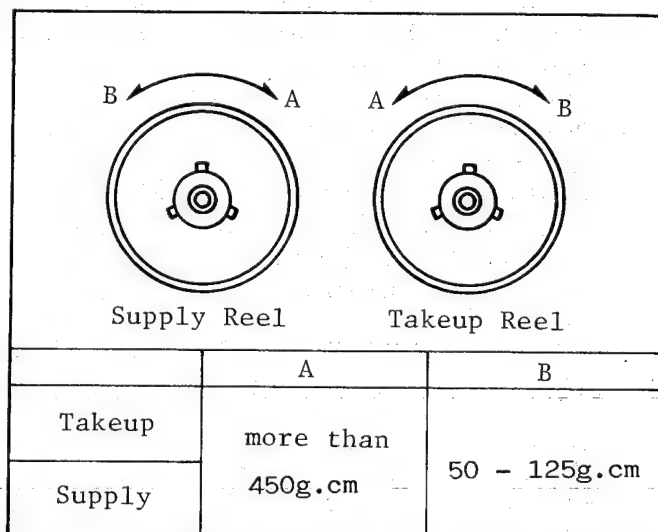


Fig. M18-2 Confirmation of Brake Torque

9. CONFIRMATION OF TAKEUP TORQUE

*** Equipment Required:**

Dial Torque Gauge.....(VFK0133)
Adaptor for Gauge.....(VFK0134)

*** Specifications:**

in PLAY mode100 - 180g.cm
in F.F. modemore than 400g.cm
in REW modemore than 400g.cm

1. Attach the adaptor to the torque gauge.
2. Remove the Top Case and Bottom plate.
3. Put the Cassette Holder in Down position without a cassette tape, referring to the procedures in 2-3-1 on page 2-3.
4. Place the torque gauge on the takeup reel table, push the Play button and read torque on the gauge.
Repeat above procedures in F.F. mode after pushing the F.F. button.

Note:

While measuring, the weight of the gauge should not rest on the reel table.

5. Set the torque gauge on the supply reel table, press the rewind button to check REW mode torque.
6. Remove the jumper.

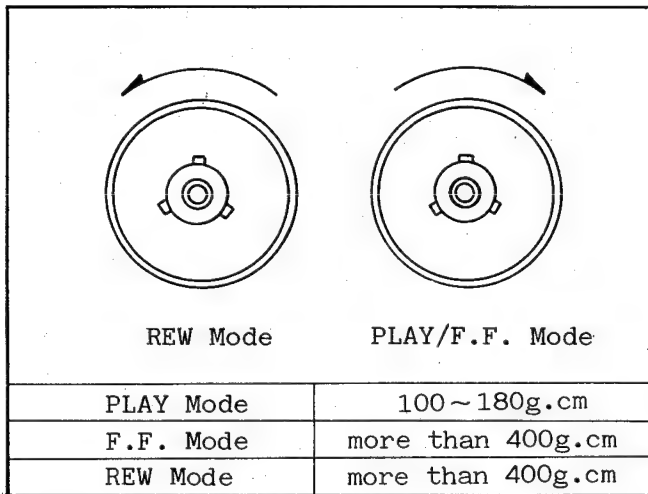


Fig. M19 Confirmation of Takeup Torque

10. POSITION ADJUSTMENT OF SAFETY TAB SWITCH

- * Equipment Required:
Cassette Holder Fixture(VFKS0004)

1. Remove the Top Case, Front Panel, and Cassette Up Unit.
2. Slightly loosen the screws (A) and (B).
3. Place the fixture in place over the reel tables.
4. Adjust the Safety Switch Angle either forward or backward until the Safety Tab Switch closes and Safety Tab Switch just turns ON. Tighten Screws (A) and (B).

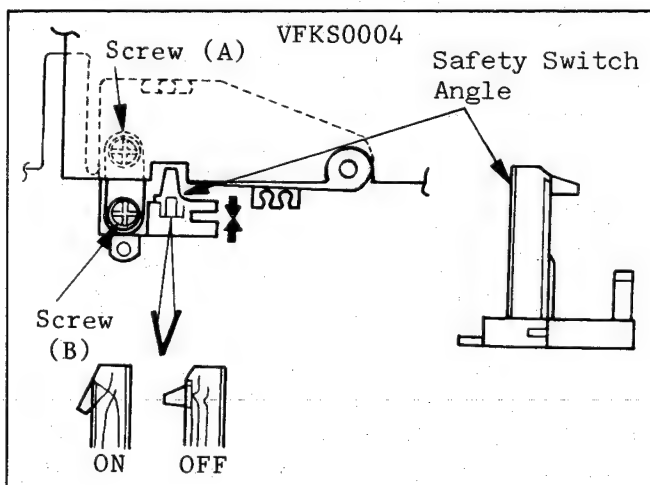


Fig. M20-1 Position Adjustment of Safety Tab Switch-(1)

Note:

1. Don't adjust with upward switch lever.
2. Confirm that the Safety Switch correctly turns ON and OFF using video cassette tapes with and without the Safety Tab.

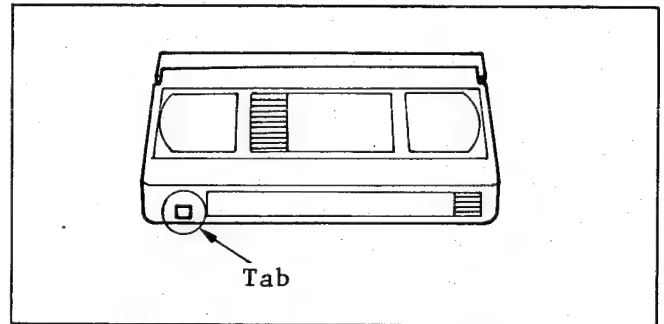


Fig. M20-2 Position Adjustment of Safety Tab Switch-(2)

11. HEIGHT ADJUSTMENT OF REEL TABLES

- * Equipment Required:
Post Adjustment Plate(VFKS0010)
Reel Table Height Fixture ..(VFKS0009)

- * Specification0 (+- 0.1)mm

1. Remove the Top Case, Front Panel, and Cassette Up Unit.
2. Place the post adjustment plate over the reels, and put the fixture on it. Set the fixture to zero "0" making sure that the scraper of fixture touches the cut-out portion of the plate.

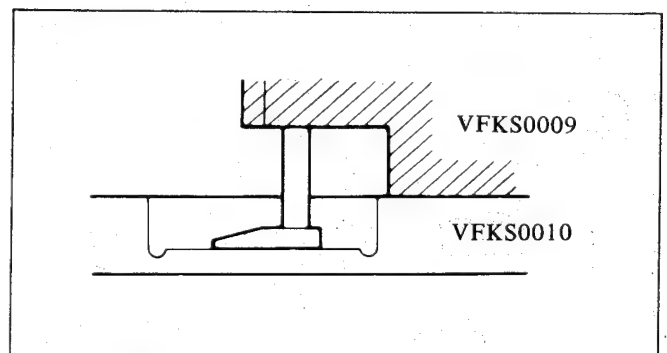


Fig. M21-1 Adj. of Reel Table Height

3. Then measure the top portion of reel table and confirm the difference against the result of the measurement taken in the above step. Do same for the other reel table.

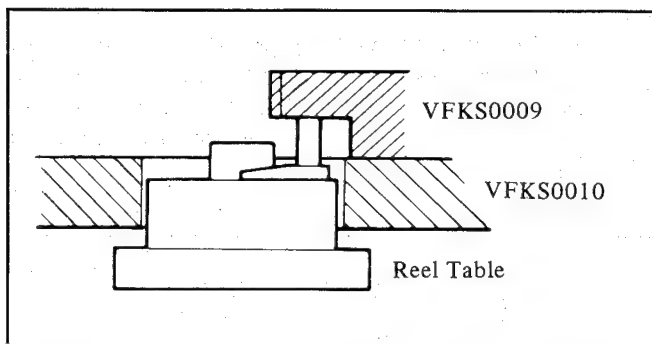


Fig. M21-2 Adj. of Reel Table Height

4. If the difference is more than 0.1mm (higher or lower), adjust the height of reel table to obtain the specified height.
5. For adjustment, change the poly slider washer located under the reel table. (The washer is available in sizes of varying thickness, $t=0.13\text{mm}$, 0.25mm and 0.5mm .)

12. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS

* Equipment Required:

Lock Screw Wrench(VFKS0032)
 Post Adjustment Plate(VFKS0010)
 Reel Table Height Fixture ..(VFKS0009)
 Nut Driver(Purchase Locally)
 Post Adjustment Screwdriver
(VFK0137)

1. Remove the Top Case, Front Panel and Cassette Up Unit. Place the Adjustment Plate.

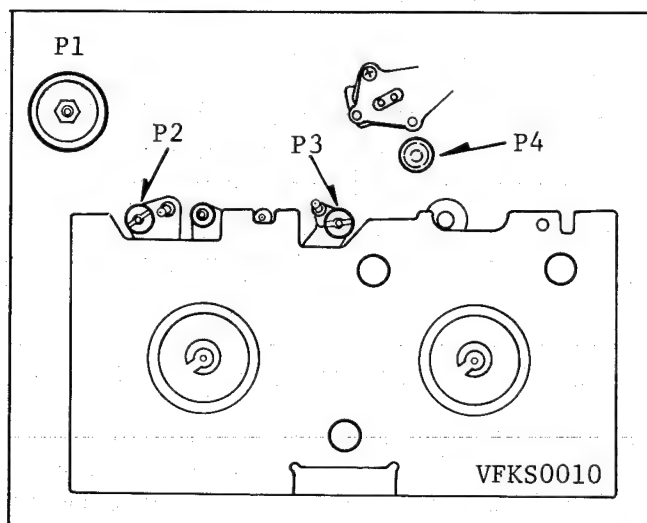


Fig. M22-1 Adj. of Tape Guide Post Height

2. First lower all posts so that the condition of height becomes as shown below.

(Lower end of post and tape guide should be lower than scraper.
 Loosen lock screw located at lower portion of posts (P2 & P3) by Lock Screw Wrench, then turn the posts with post adjustment screwdriver.)

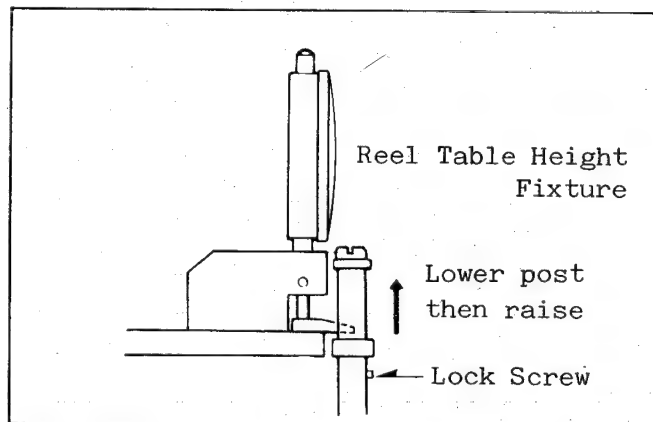


Fig. M22-2 Adj. of Tape Guide Post Height

3. Place the fixture on the Adjustment Plate and fit the scraper to the Adjustment Plate as shown in Fig. M22-2. (The scraper of the fixture should be fully lowered till it touches plate.)
4. Set the fixture to zero "0" and slowly raise the post until it just touches the scraper. When the scraper touches the post, it should fit as shown below in Fig. M22-3 (b).
 For adjustment of P1 and P4, use the nut driver.
 (The post cap on P4 can be removed by turning counterclockwise.)
 For adjustment of P2 and P3, use the post adjustment screwdriver.

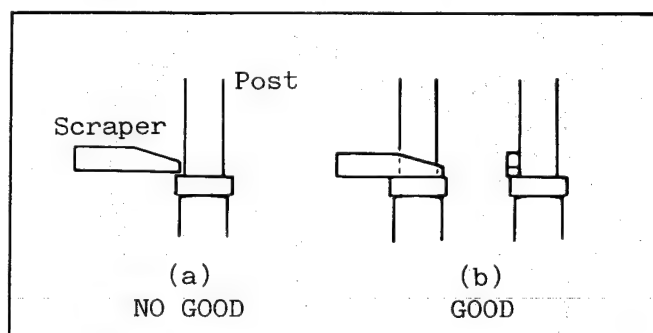


Fig. M22-3 Adj. of Tape Guide Post Height

Note:

Upon completion of adjustment, tighten lock screws on the P2 and P3 by Lock Screw Wrench and also install the post cap on post 4. When the post cap on P4 is reinstalled, the position of it should be as shown below when viewed from the direction indicated by the arrow.

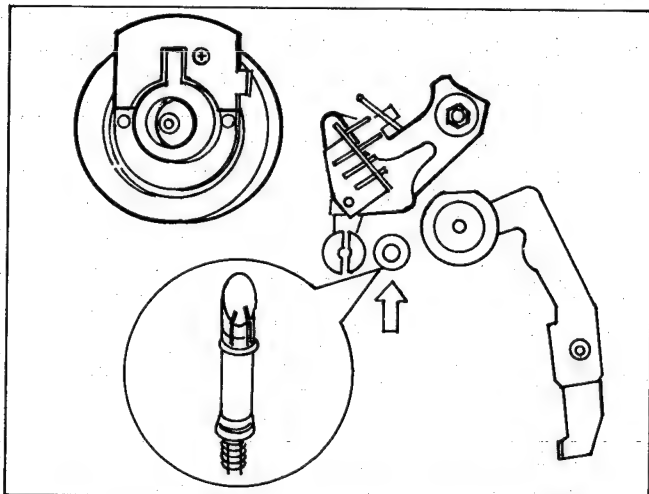


Fig. M22-4 Installation of Post-Cap

13. HEIGHT ADJUSTMENT OF P5 ARM UNIT

Note:

1. The adjustment should be performed after the adjustment of P4 as the spec. is based on height of P4.
2. The adjustment should be performed in the loading completion mode.

*** Equipment Required:**

Post Adjustment Plate(VFKS0010)
 Reel Table Height Fixture ..(VFKS0009)
 Nut Driver (5.5mm) ..Purchase Locally
 Specification : 0 (+ - 0.05) mm

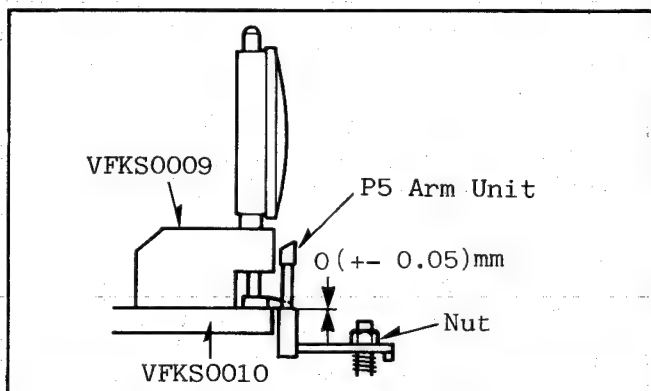


Fig. M23 Height Adjustment of P5 Arm Unit

1. Put the cassette Holder in down position without a cassette tape referring to the procedures in 2-3-1 on page 2-2.
2. Turn power switch ON, push the play button for loading.
Then disconnect the AC plug.
3. First lower the P5 Arm Unit a little lower than the Post Adjustment Plate by turning the nut clockwise.
4. Place the post adjustment plate, put the reel table height fixture on the plate and set the height fixture to zero "0" with condition the foot touches on the height adjustment plate.
5. Slightly raise the post by turning the nut counterclockwise. Place the foot to the post as shown in Fig. M23.
6. Then slowly turn the nut till the fixture reads the specified height.
7. Reinstall the Cassette Up Unit and remove the jumper and plug in for unloading.

14. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

Note:

To perform these adjustment/confirmation procedures, make sure that the tracking control is set in the detent (fixed) position.

*** Equipment Required:**

Alignment Tape(VFMS0001H6)
 Post Adjustment
 Screwdriver(VFK0137)
 H-Position Adujstment
 Screwdriver(VFKS0003)
 Lock Screw Wrench(VFKS0032)
 Nut Driver (8mm).....Purchase Locally
 Oscilloscope

14-A. CONFIRMATION OF TAPE TRAVEL

1. Playback a cassette tape and confirm that the tape travels without curling at the edges of the tape.

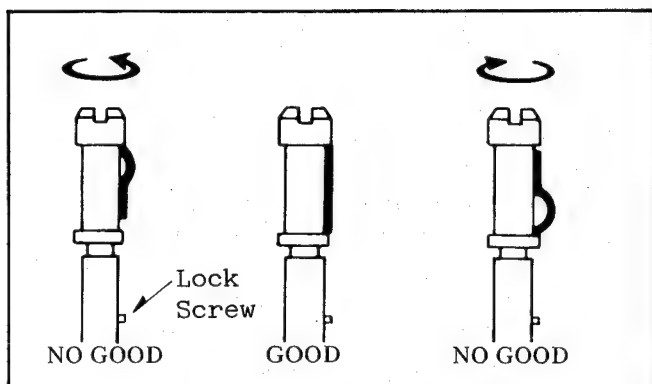


Fig. M24 Confirmation of Tape Travel

2. If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver. (for P2 & P3)

Note:

Before turning P2 and P3, slightly loosen a lock screw by the Lock Screw Wrench.

14-B. CONFIRMATION OF A/C HEAD HEIGHT

This confirmation is required when the A/C Head was replaced and for preliminary height adjustment. For final adjustments, perform item 14-C, 14-D.

1. Looking at the lower edge of the control head with the tape running, ensure that the lower edge of the tape runs along the lower edge of the control head. If it doesn't, slightly turn the nut (A) in either direction to correct. Clockwise to lower the head and counterclockwise to raise it.

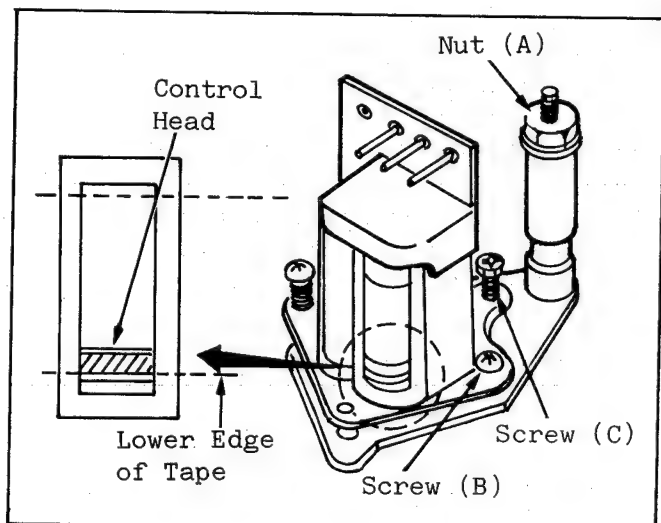


Fig. M25 Confirmation of A/C Head Height

14-C. CONFIRMATION OF TILT OF A/C HEAD

This procedure should be performed after the height adjustment of P4.

1. Playback the tape and confirm that the tape runs between lower and top limits of P4 post. Also confirm that the tape is running smoothly.
2. If adjustment is required, turn Screw (C) clockwise until curling is apparent at lower edge of P4. Then turn screw (C) counterclockwise until the curling is smoothed out.

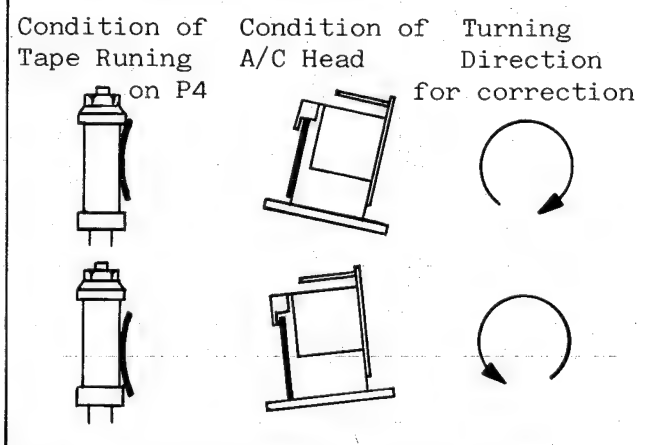


Fig. M26 Confirmation of A/C Head Tilt

14-D. HEIGHT AND AZIMUTH ADJUSTMENT OF A/C HEAD

1. Connect the oscilloscope CH1 to the Audio Output (Left) and CH2 to the Audio Output (Right) on the rear panel.
2. Playback the color bar portion (3kHz, Stereo) of the alignment tape (VFMS 0001H6).
3. Adjust the screw (B) so that the CH2 Audio Output (Right) is maximized.

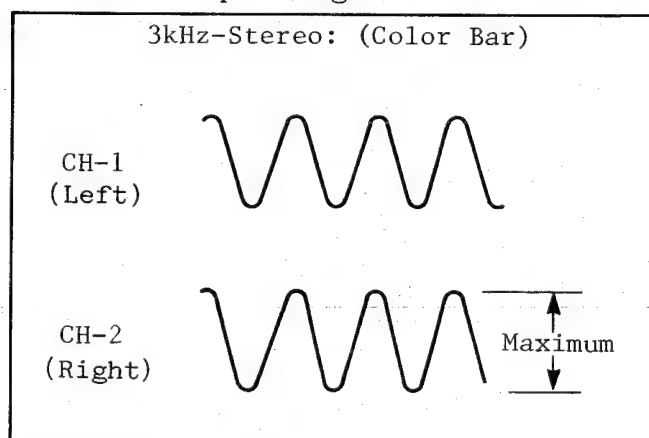


Fig. M27-1 Height and Azimuth Adjustment of A/C Head

- Then, adjust the nut (A) so that the CH2 Audio Output (Right) is Maximized.

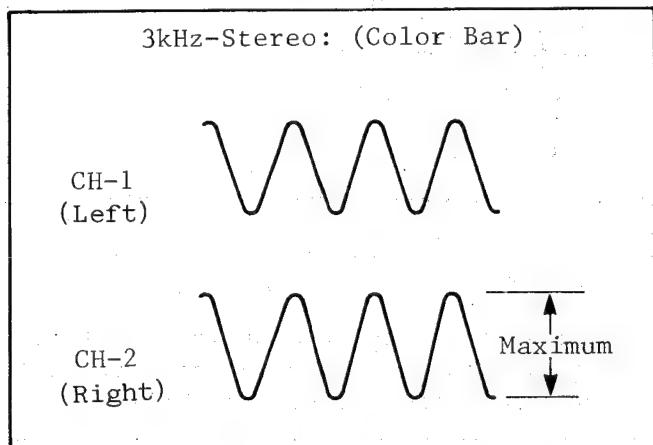


Fig. M27-2 Height and Azimuth Adjustment of A/C Head

- Playback the monoscope portion (6KHz, Monaural) of the alignment tape (VFMS 0001H6).
- Then, adjust the screw (B) so that the phases of both channels match as shown in Fig. M27-3.

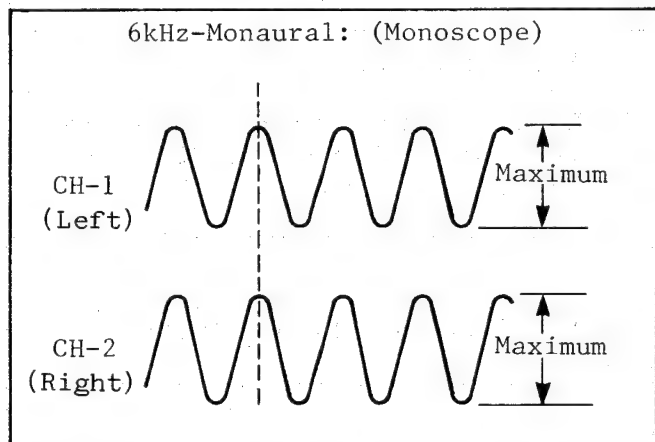


Fig. M27-3 Height and Azimuth Adjustment of A/C Head

Note:

During this adjustment, the audio output level should be maximum.

14-E. HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

- Set the tracking control to the detent (fixed) point. Connect the oscilloscope CH1 to TP3005 on the Signal Process Section and CH2 to TP2003 on the Servo Section.

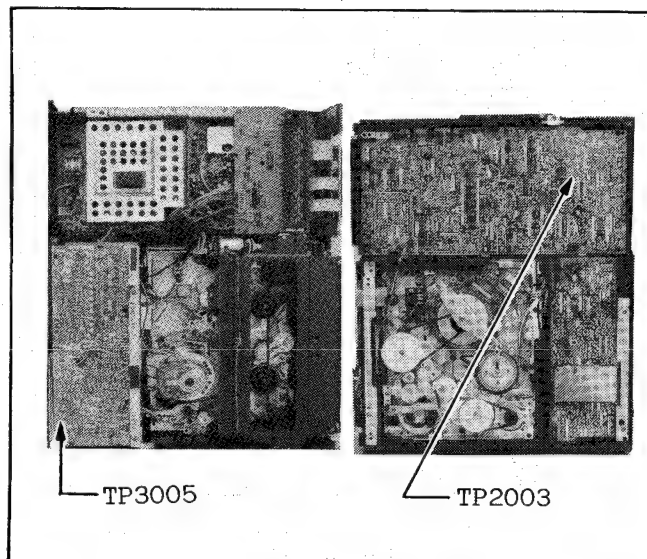


Fig. M28 Horizontal Position Adjustment of A/C Head-(1)

- Playback the monoscope portion of the alignment tape (VFMS0001H6) and note the envelope which corresponds to the high period of the Head Switching Signal at TP2003 as shown in Fig. M29. Once note, use only this envelope for the subsequent Adjustments.
- Slowly turn the Adjustment Nut so that the envelope is at maximum. Before finding the center of the maximum period of envelope, rotate the adjustment nut back and forth slightly to confirm the limits on either side of the maximum period. Next determine the center point.
- Confirmation of the correct adjustment can be made by turning the tracking control to the right and the left to check the symmetry of the envelope. If the envelope changes symmetrically, the adjustment has been done correctly.

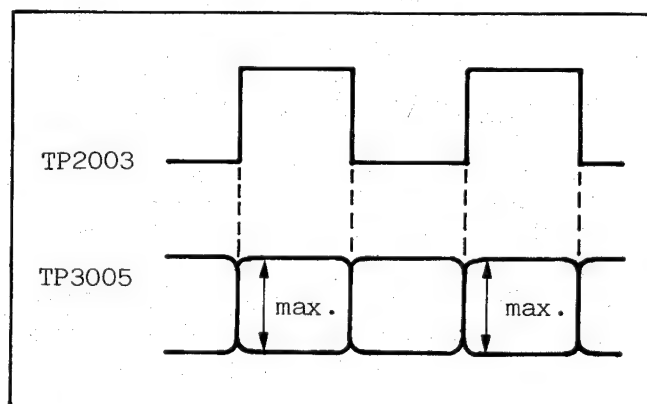


Fig. M29 Horizontal Position Adjustment of A/C Head-(2)

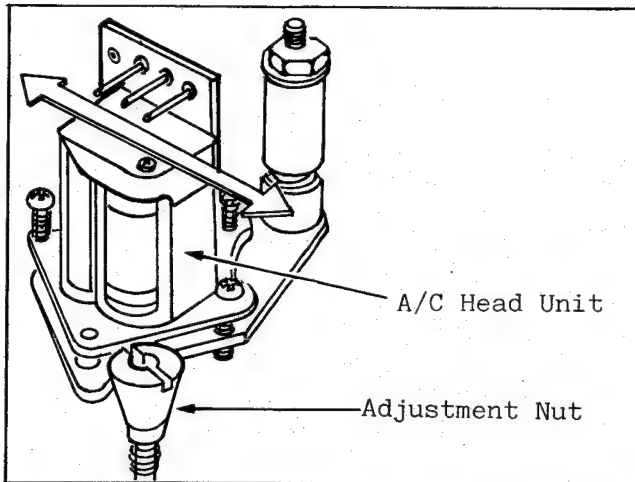


Fig. M30 Horizontal Position Adjustment of A/C Head-(3)

14-F. CONFIRMATION ADJUSTMENT OF ENVELOPE OUTPUT

1. Set the tracking control in the detent (fixed) position. Connect the oscilloscope to the TP3005 on Signal Process Section. Use TP3006 as a trigger.
2. Playback the monoscope portion of the alignment tape (VFMS0001H6) and adjust the height of posts P2 and P3 watching the scope display so that the envelope becomes as flat as possible.
($V1/V_{\text{max}} \geq 0.7$, $V2/V_{\text{max}} \geq 0.8$)
If adjustment is required, turn top of post with post adjustment screw-driver. For adjustment of P2 & P3, refer to step 2 of item 14-A.

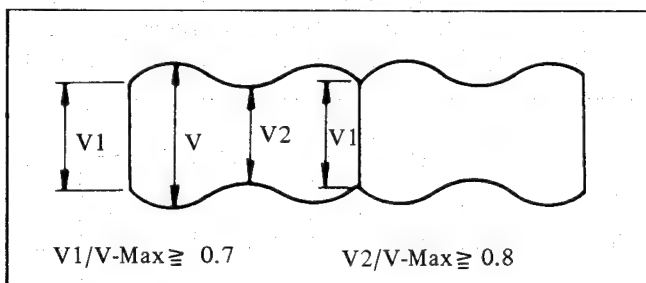


Fig. M31-1 Spec. of Envelope Figure

3. When the scope display is as follows, adjust the height of P2 so that the waveform looks like Fig. M31-4.

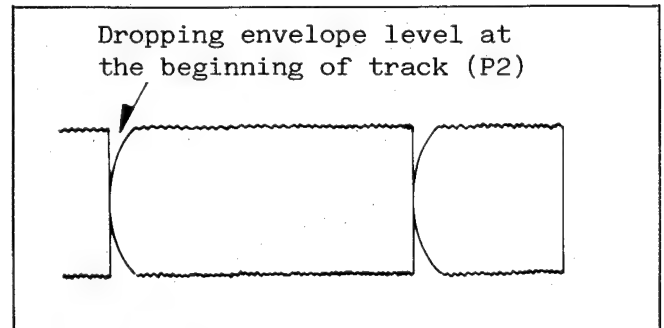


Fig. M31-2 Envelope Figure

4. When the scope display is as follows, adjust the height of P3 so that the waveform looks like Fig. M31-4.

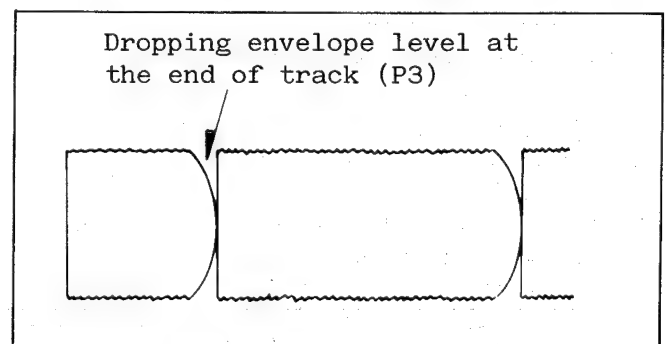


Fig. M31-3 Envelope Figure

5. The scope display should appear as shown below when P2 and P3 are adjusted correctly.

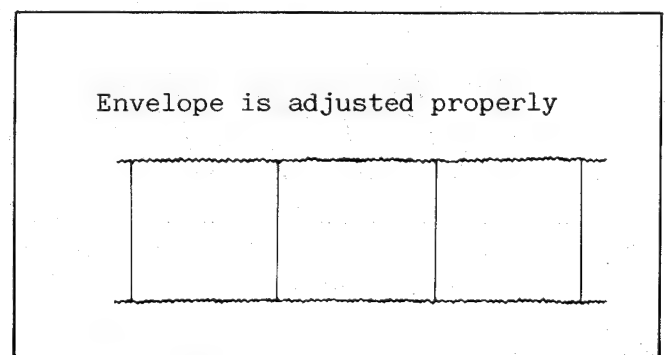


Fig. M31-4 Envelope Figure

Note:

Upon completion of adjustment of P2 and P3, confirm the Horizontal Position by turning the tracking control clockwise or counterclockwise. And if required, perform "Horizontal Position Adjustment of A/C Head".

15. ADJUSTMENT OF FG HEAD GAP

*Equipment Required:

Fine Adjustment Screwdriver...VFK0136

*Specification: 0.16 (+/- 0.02) mm

1. Remove 2 screws (A) on the thrust Holder, then remove the Capstan Pulley Unit, 5 screws (B) and Capstan Stator Unit.

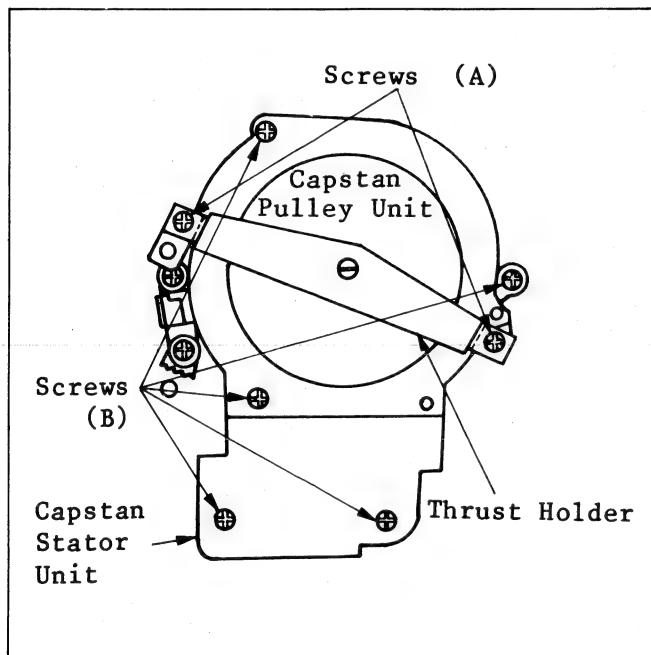


Fig. M32-1 Adjustment of F.G. Head Gap

2. Slightly loosen the 2 screws (C) and set the fine adjustment screwdriver into the hole (D). Turn screwdriver clockwise until the FG Head touches the rotor and just slightly turn it counterclockwise so that the gap becomes as specified.

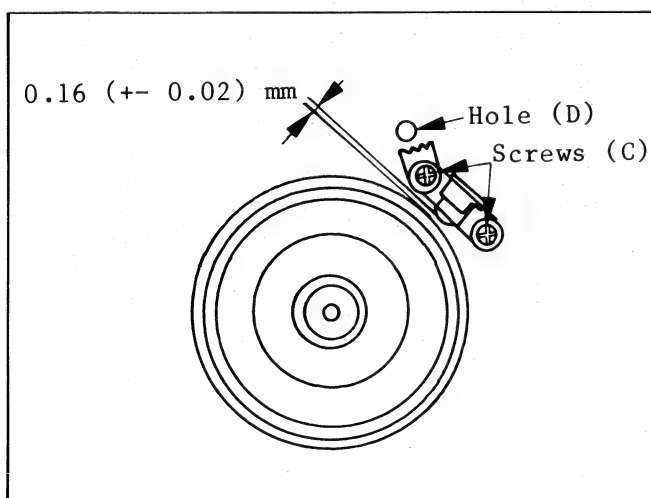


Fig. M32-2 Adjustment of F.G. Head Gap

Note:

1. Do not touch the outside circumference surface of the rotor with any tool, and keep any magnetizable material away from the rotor magnet.
2. When reinstalling the Capstan Stator Unit, the circumference of the hole in the Capstan Stator Unit must be centered with the circumference of the Rotor Boss.

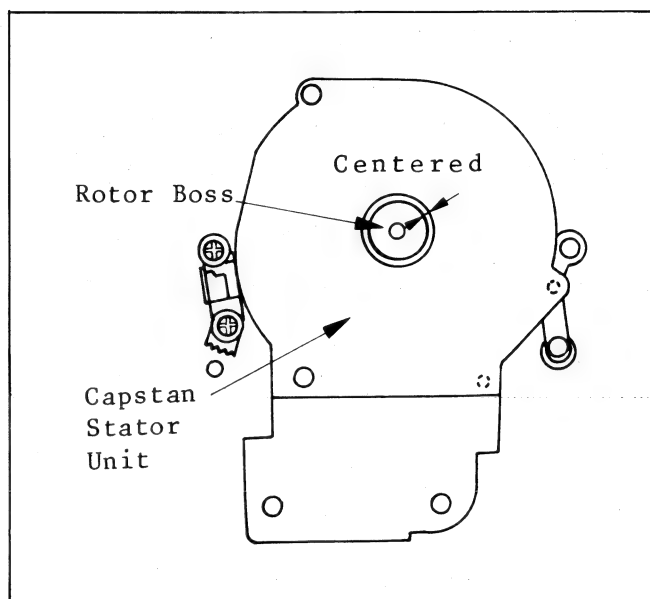


Fig. M32-3 Adjustment of F.G. Head Gap

16. CONFIRMATION/ADJUSTMENT OF THRUST GAP

* Equipment Required:

Reel Table Height Fixture...(VFKS0009)

* Specification: 0.05 - 0.09mm

1. Place the Unit upside down and place the height fixture on the thrust Holder. Set the fixture to zero "0".
2. Next, push the capstan shaft by your finger, and confirm the thrust gap.
3. If the gap is out of specification, then adjust the thrust screw by turning it clockwise or counterclockwise.

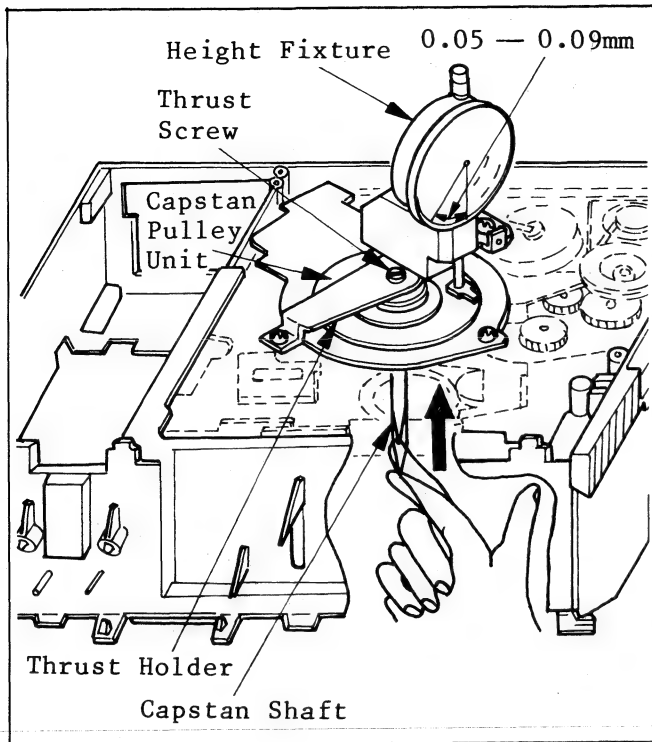


Fig. M33-1 Confirmation/Adjustment of Thrust Gap

Note:

Upon completion of above procedure, adjust the capstan seal so that this seal is out of contact with the pressure roller and capstan holder. The specification of clearance is approx. 0.5 (+/- 0.2)mm.

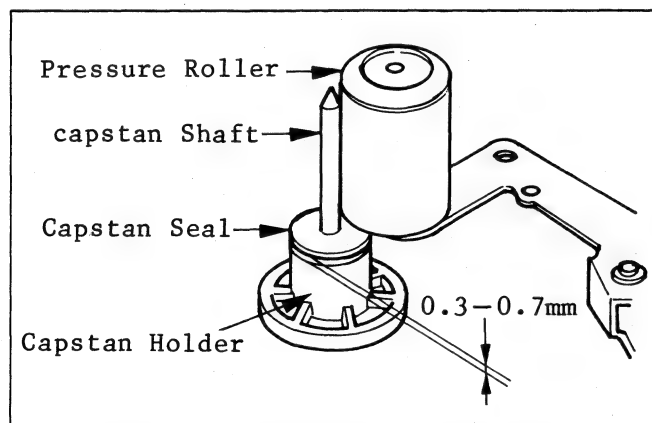


Fig. M33-2 Adjustment of Capstan Seal

17. ADJUSTMENT OF CAM GEAR AND MODE SELECT SWITCH

General Condition:

The mechanism of this model is mostly engaged to the electrical circuit, System Control Circuit, through the mode select switch. Therefore the relation between the mode select switch and the cam gear determines all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on. If the adjustment of this item is performed improperly, the deck will be unloaded or automatically stopped. It will also result in damage to mechanical and electrical parts.

Note:

Step 7 of this procedure describes the necessary adjustment if the mode select switch is replaced.

Adjustment Procedures:

This procedure starts with the condition that the Cassette Lock Unit, Kick Base Unit, Sector Gear, Cam Gear and Driving Gear have been removed.

1. Turn loading gear clockwise until post 2 and 3 are fully unloaded. The small projection on the loading gear will be pointing up in the unloaded condition.

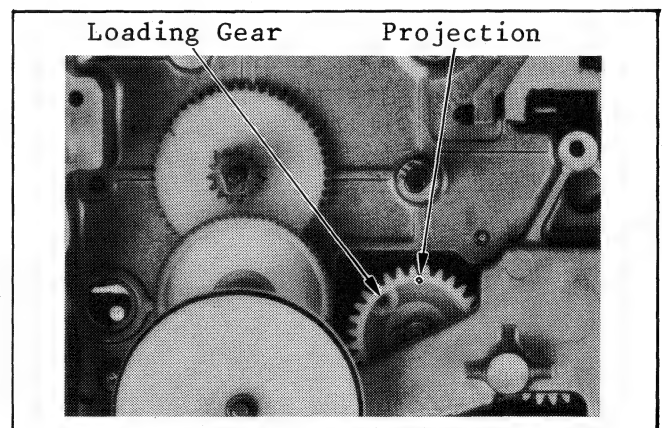


Fig. M34-1 Adj. Procedure

2. Install the driving gear so that the hole on the driving gear aligns with the projection on the loading gear. Ensure that the loading gear is still in the fully unloaded condition. Install the C-Ring to mount driving gear.

3. Slowly slide the main rod so that the hole (B) of the main rod meets the hole (C) of chassis. This will simulate stop mode (unloading completion) of main rod and mode select switch.

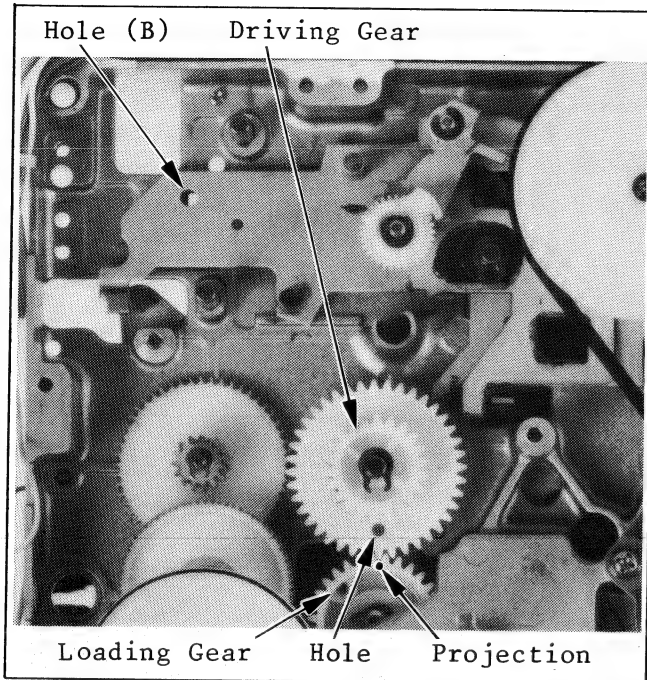


Fig. M34-2 Adj. Procedure

4. Insert the cam gear with the simple slot side showing so that the hole (A) on the gear meets the hole (B) on the main rod and hole (C) on the chassis. To facilitate matching the three holes, use the small hex wrench or a metal pin. Then install the C-Ring to mount cam gear.

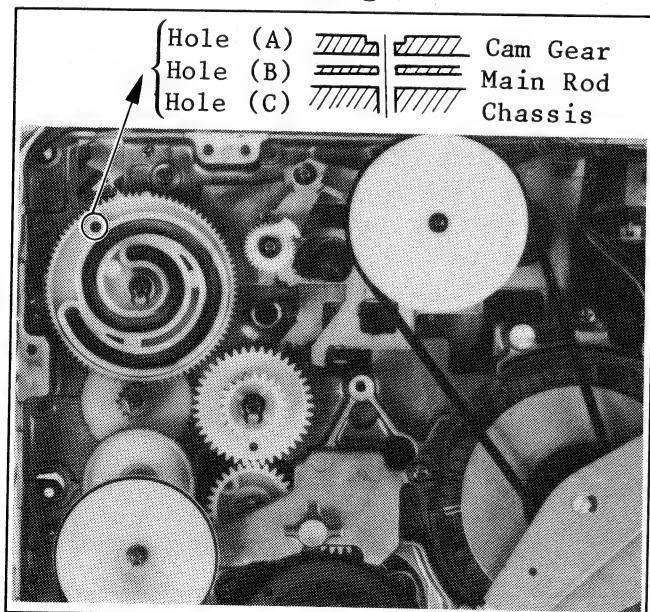


Fig. M34-3 Adj. Procedure

5. Install the sector gear so that the pin on the sector gear meets the inner slot of the cam gear as shown in Fig. M34-4. Also install C-Ring in order to mount sector gear.

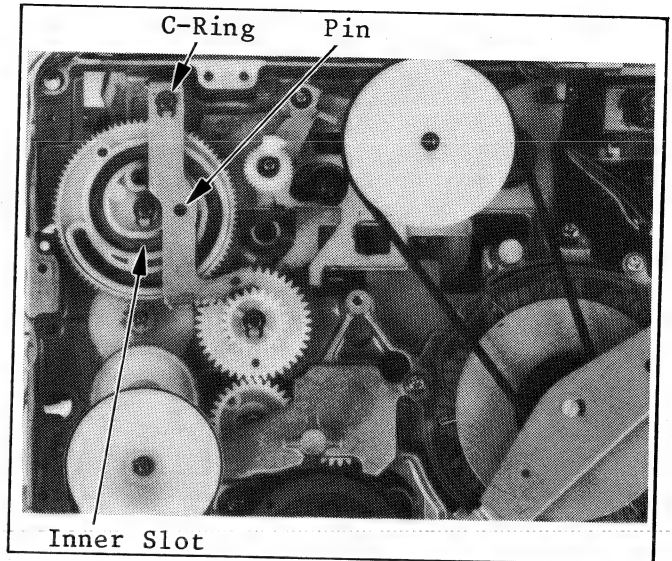


Fig. M34-4 Adj. Procedure

6. Completed adjustments should appear as illustrated below.

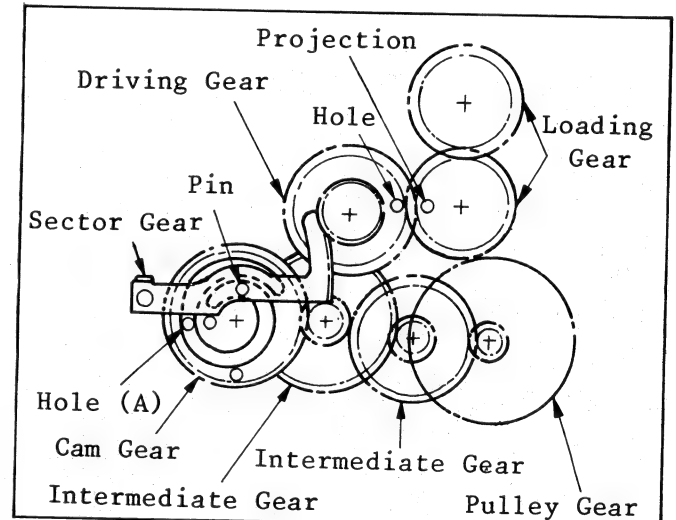


Fig. M34-5 Adj. Procedure

7. (Adjustment of Mode Select Switch) Keep the main rod in the unloading completion condition so that the hole (A) cam gear, hole (B) of main rod and the hole (C) of chassis are aligned. Upon completion, ensure that the movement of the deck is normal. Place the Mode Select Switch so that the movable projection(A) on Mode Select Switch fits around the tab on the main rod, enclosing it.

Slowly slide the Mode Select Switch sideways until the V-notches in movable Projection and V-notch on the Mode Select Switch are aligned. Tighten two screws (C) to secure alignment.

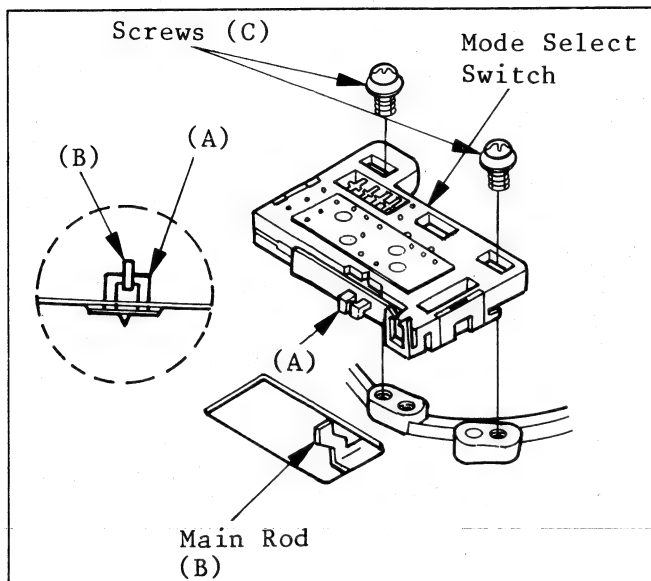


Fig. M34-6 Adj. of Mode Select Switch

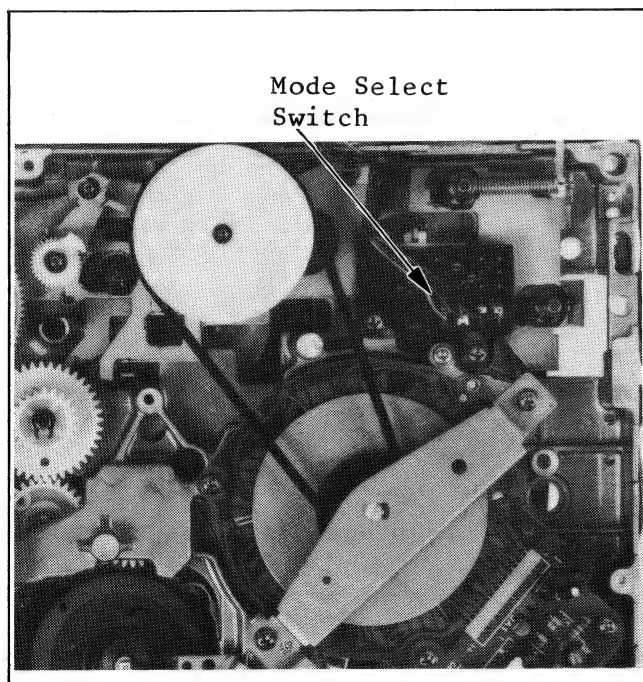


Fig. M34-7 Adj. of Mode Select Switch

8. Turn the Pulley gear in both directions to confirm smooth movement of this mechanism.
9. Install the Cassette Lock Unit and Kick Base Unit.

18. ADJUSTMENT OF CASSETTE UP GEARS

1. Remove the Cassette Up Unit according to removal procedure of Cassette Up Unit.
2. Set Cassette Up Unit in full cassette Up condition.

Full Cassette Up Condition :

- (a). Turn the Cassette Loading Motor by hand to the Cassette Up Condition.
- (b). Then remove the worm wheel stopper. Confirm that the wiper gear arm Unit (R) is on the full left side of its arc and cassette holder is in full up condition as shown in Fig. M35.

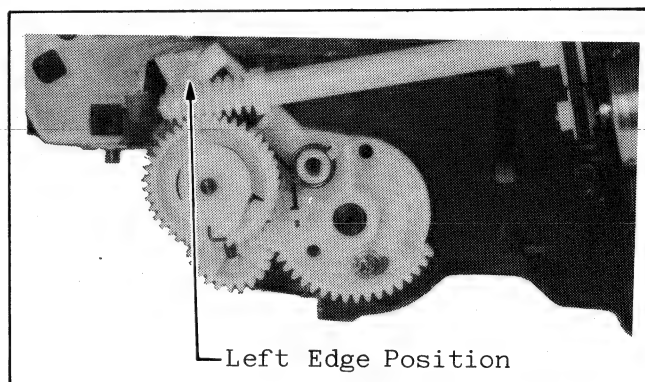


Fig. M35 Cassette Up Condition

Note:

All the following procedures for adjustment and part replacement should be performed with Cassette Up Unit in full Cassette Up Condition.

18-A. RIGHT SIDE GEARS

This procedure starts with the condition that the switch Angle Unit, worm wheel unit, wiper Gear arm Unit (R) and Main Shaft Gear (R) have been removed.

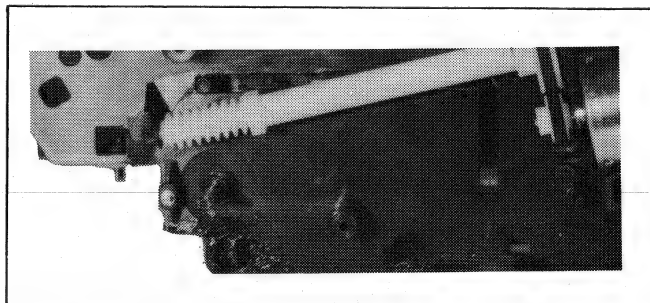


Fig. M36-1 Adjustment of Cassette Up Gears-(1)

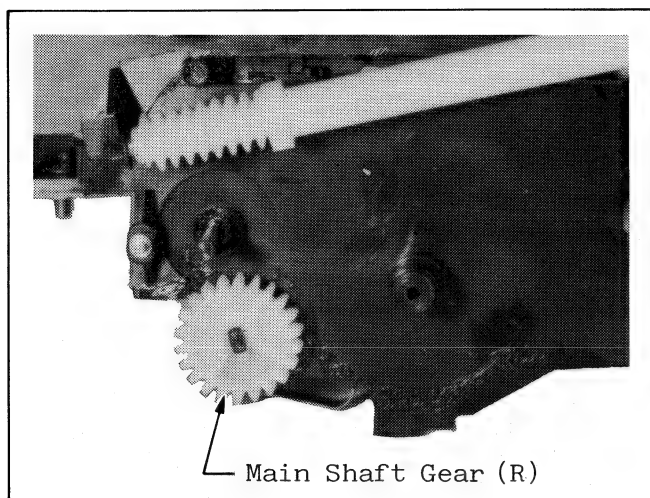


Fig. M36-2 Adjustment of Cassette Up Gears-(2)

2. Install the wiper gear arm (R) unit so that the projection (A) on the wiper gear arm (R) unit and the Projection (B) on the Main shaft Gear (R) are aligned. Pin of Cassette Holder-R should fit into the slot of wiper gear arm (R).

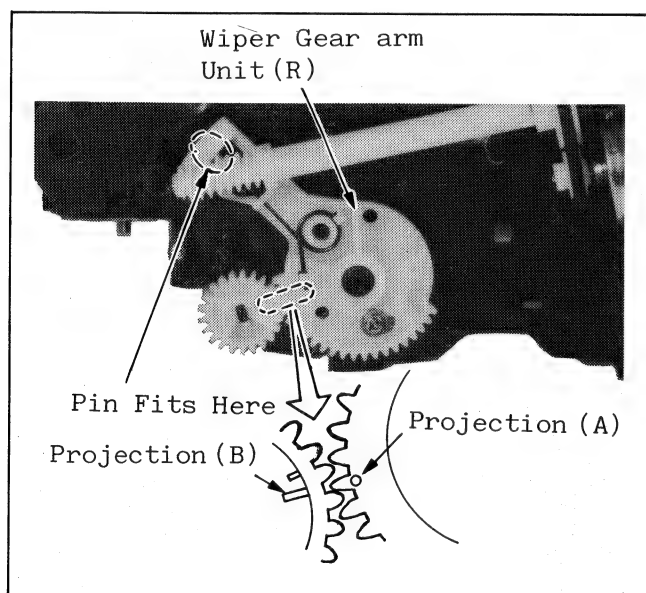


Fig. M36-3 Adjustment of Cassette Up Gears-(3)

3. Install the worm wheel unit so that the tooth (E) beside the projection (C) on the worm wheel unit and the valley (F) on the Main Shaft Gear opposite the shorter projection (D) on the Main shaft Gear should be aligned as shown in Fig. M36-4.

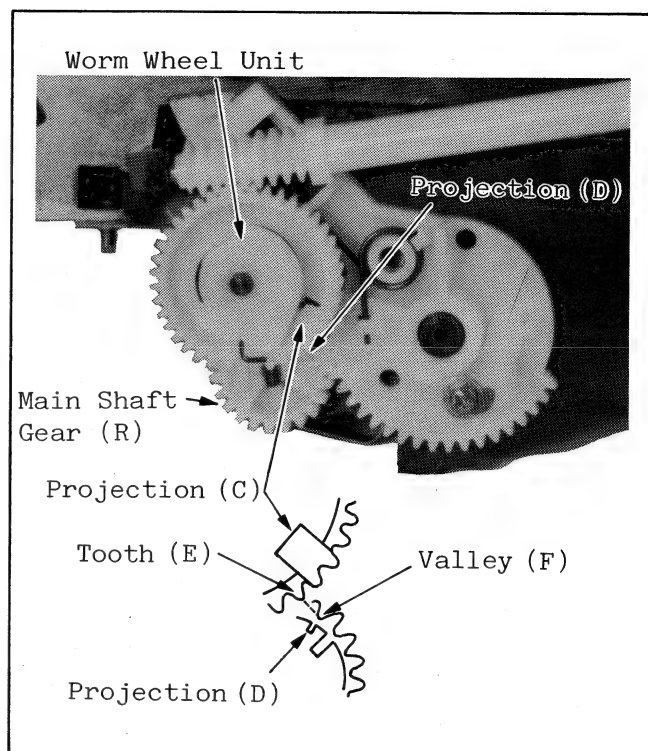


Fig. M36-4 Adjustment of Cassette Up Gears-(4)

4. Install worm wheel stopper unit and support angle with 3 screws (A) as shown in Fig. M36-5.

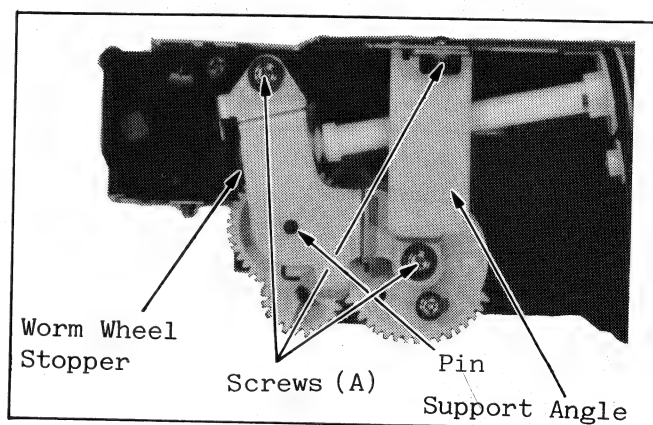


Fig. M36-5 Adjustment of Cassette Up Gears-(5)

5. Install the Switch Angle Unit with screw and 3 Locking tabs as shown in Fig. M36-6.

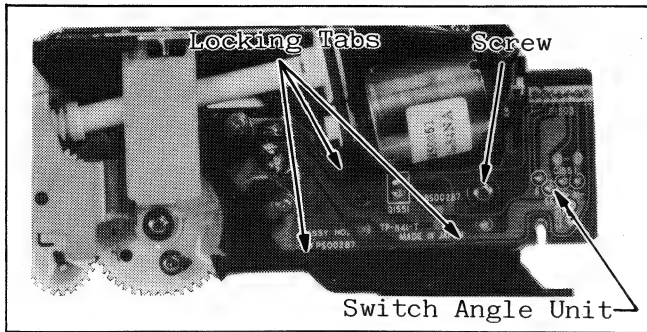


Fig. M36-6 Adjustment of Cassette Up Gears-(6)

18-B. LEFT SIDE GEARS

This procedure starts with the condition that the Cassette Compartment Opener Lever, wiper Gear (L) and Main Shaft (L) Unit have been removed.

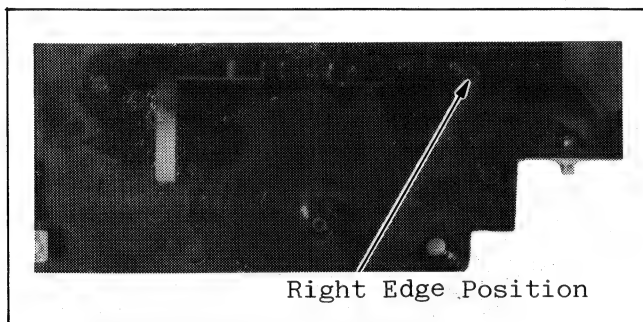


Fig. M36-7 Adjustment of Cassette Up Gears-(7)

1. Install the Main shaft Gear (L) Unit.

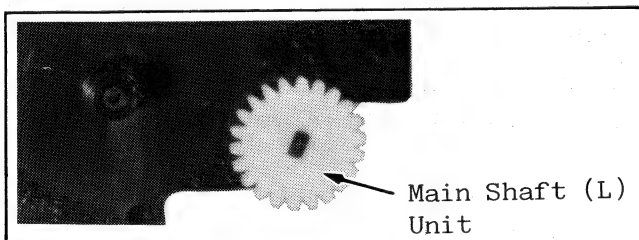


Fig. M36-8 Adjustment of Cassette Up Gears-(8)

2. Install the wiper Gear (L) unit so that the projection (E) on the wiper Gear (L) unit meets the projection (F) on the Main Shaft Gear (L) Unit. At that time, Pin of Cassette holder-L should fit into the slot of wiper Gear (L). Then install the screw (B).

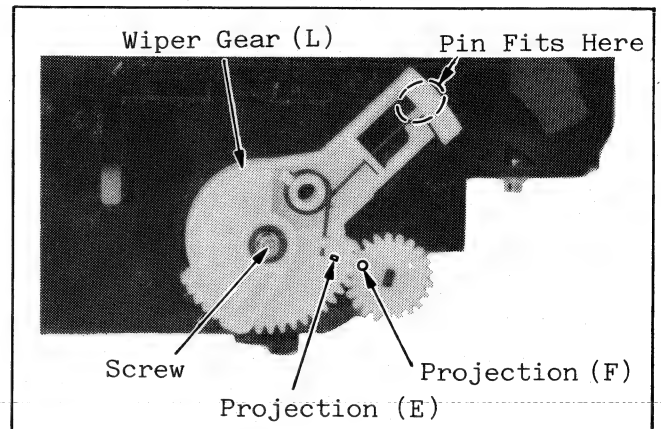


Fig. M36-9 Adjustment of Cassette Up Gears-(9)

3. Install the cassette compartment opener Lever as shown in Fig. M36-10. Ensure a portion of opener lever (G) slides into the opening beside Cassette door. Snap Cassette Compartment opener lever into place over its pin. Pull down on (H) to ensure Cassette door opens.

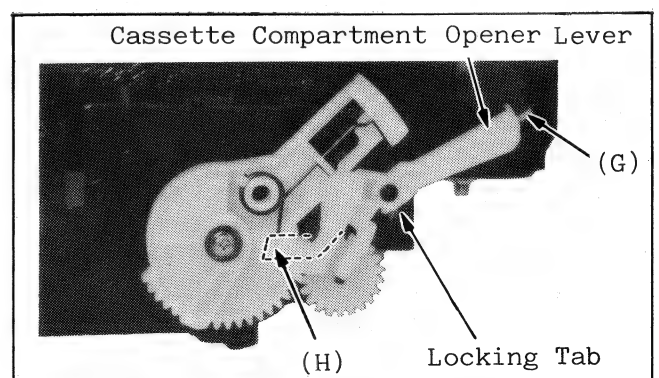


Fig. M36-10 Adjustment of Cassette Up Gears-(10)

19. ADJUSTMENT OF CASSETTE UP/DOWN SWITCH

* Equipment Required :

Fine Adjustment Screwdriver ..VFKS0136

1. Confirm that the Cassette Up Unit is in the full cassette up condition and then remove the Cassette Up Unit referring to removal procedure of Cassette Up Unit.
2. Confirm that the projection (F) on the Wiper Arm Gear (R) Unit meets the apex of triangle of Cassette In Switch as shown in Fig. M36-11.
3. Slightly loosen the Screw (A) and insert the adjustment screwdriver into the hole (B).
4. Turn the adjustment screwdriver until projection (G) on the wiper Arm Gear (R) Unit meets the triangle of Cassette Up/Down Switch as shown in Fig. M36-11. Then Confirm the Cassette Up/Down Switch turns ON and tighten screw (A).
5. Connect the connector P1551 on the connection C.B.A. Insert the cassette tape, then confirm cassette up and cassette down movement.

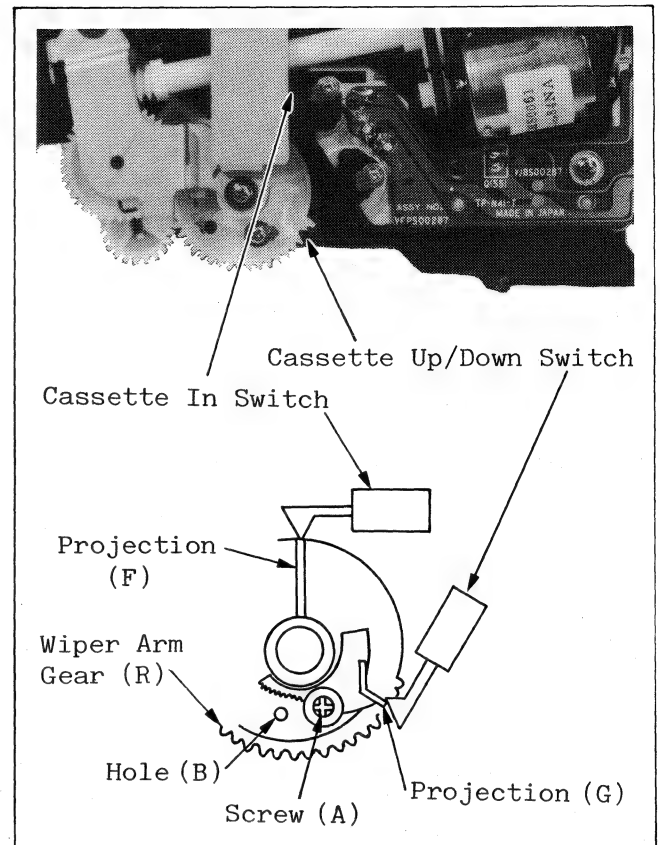
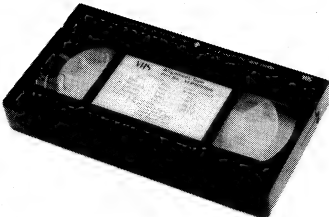
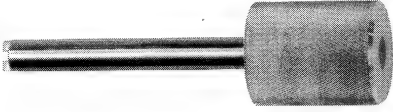
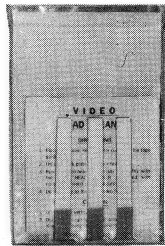
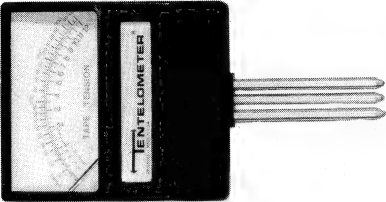
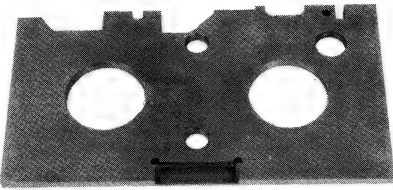
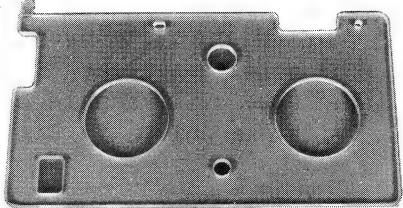
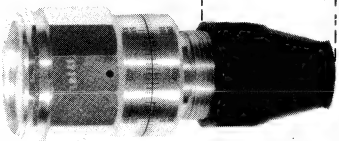
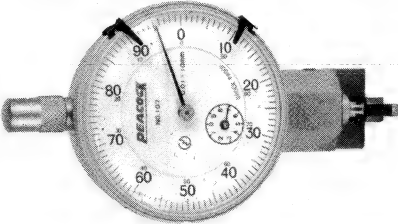

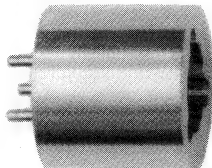
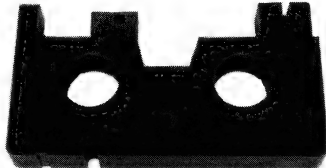


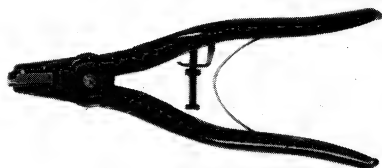
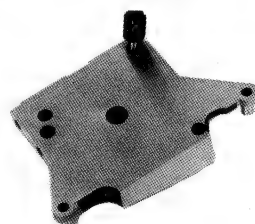

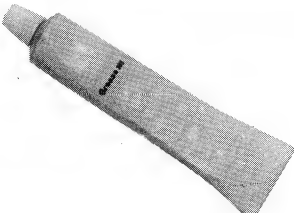


Fig. M36-11 Adjustment of Cassette Up Gears

Servicing Fixtures & Tools

VFMS0001H6 VHF Alignment Tape 	VFK0137 Post Adjustment Screwdriver 	VFK27 Head Cleaning Stick 
Back Tension Meter (Tentelometer, Made in U.S.A.) 	VFKS0010 Post Adjustment Plate 	VFKS0002 Tension Post Adj. Plate 
VFK0133 Dial Torque Gauge VFK0180 (Plastic Clamper Only) 	VFKS0009 Reel Table Height Fixture 	VFKS0003 H-Position Adj. Fixture 
VFK0134 Adaptor for VFK0133 	VFKS0004 Cassette Holder Fixture 	VFKS0031 V-Hold Adj. Tool 
VFKS0032 Lock Screw Wrench 	VFK0144 Retaining Ring Remover (3mmφ) VFK0145 Retaining Ring Remover (4mmφ) 	VFKS0029 V-Stopper Adj. Fixture 
VFK0136 Fine Adjustment Screwdriver (3mmφ) 	MOR265 Molytone Grease 	

ELECTRICAL ADJUSTMENT PROCEDURES

SERVICE CAUTION

When servicing the Luminance, Chrominance C.B.A.s and the TV Demodulator Unit, take notice of following items.

A. Luminance and Chrominance C.B.A.s

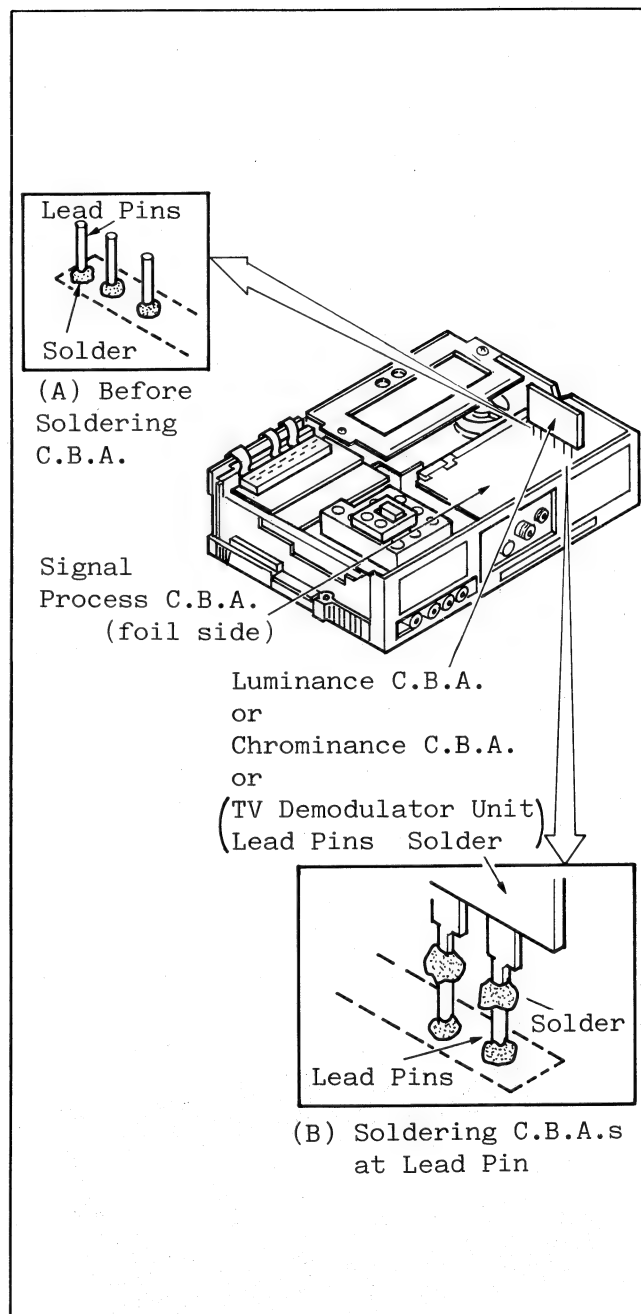
Do not bend or spread apart the Luminance and Chrominance C.B.A.s. By doing so, damage to the Signal Process C.B.A. or pins on the C.B.A.s may result.

B. Adjustment on these C.B.A.s and TV Demodulator Unit

Adjustment can be performed without removing these C.B.A.s or the TV Demodulator Unit.

C. Signal check and Replacement of parts on these C.B.A. and the TV Demodulator Unit.

1. Remove TV Demodulator or one of these C.B.A.s, then insert the Lead Pins and solder on the foil side of Signal Process C.B.A. as shown in (A) in figure.
2. Solder the TV Demodulator Unit or the extracted C.B.A. at the Pins on the Signal Process C.B.A. as shown in (B) in figure.
Ensure that the pins numbers are aligned with their respective PC Board Pin locations.
3. Perform the signal check or replace parts.
4. After completion, restore to the original assembled condition.



NOTE:

When troubleshooting the Luminance or Chrominance C.B.A. and soldering to the foil side of Signal Process C.B.A., remove the metal P.C.Board angle.

1. TEST EQUIPMENT

To perform the electrical adjustments completely, the following equipment is required.

1. DVM (Digital Volt Meter)
Voltage Range : 0.001 - 50V
2. Dual-trace Oscilloscope
Voltage Range : 0.001 - 50V/Div.
Frequency Range : DC - 15MHz
Probes : 10:1, 1:1
3. Frequency Counter
Frequency Range : 0 - 150MHz
4. Signal Generator
Sinewave : 0 - 10MHz
5. AC Millivolt Meter
Voltage Range : 0 - 0.3mVrms
: 0 - 3mVrms
6. Tuning Amp.
7. VIF Sweep Generator/Trap Adjuster
8. Spectrum Analyzer
9. NTSC Video Pattern Generator
10. DC Power Supply Unit
Voltage : 0 - 15V DC
11. Variable Attenuater
Attenuate : (+- 0) dB - -50dB
12. Monitor Scope
13. Color TV Receiver or Monitor
14. V-Hold ADJ. Tool (VFKS0031)
15. Plastic Tip Driver and Non-Metal Driver
16. Lock Screw Wrench (VFKS0032)
17. Isolation Transformer
18. VHS Alignment Tape (VFMS0001H6)

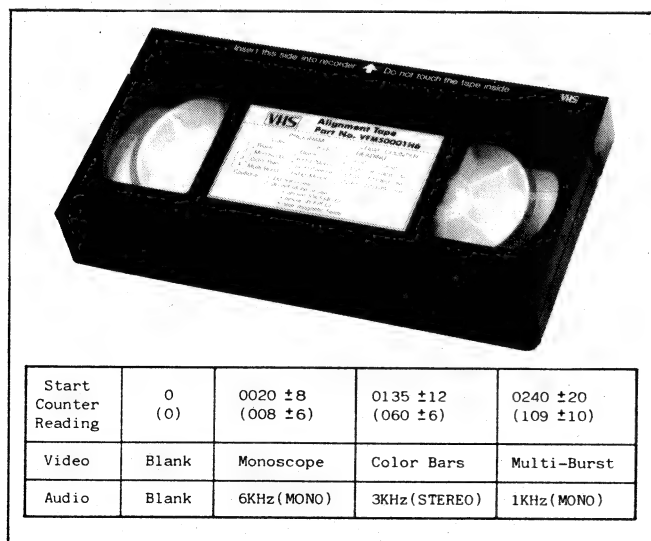


Fig. E1

2. ADJUSTMENT PROCEDURES

These adjustment procedures consist of the following sections.

1. Servo Section
2. Audio Section
3. Luminance and Chrominance Section
4. System Control Section
5. TV Demodulator Section
6. IR Wireless Receiving Detector Section

2-1. SERVO SECTION

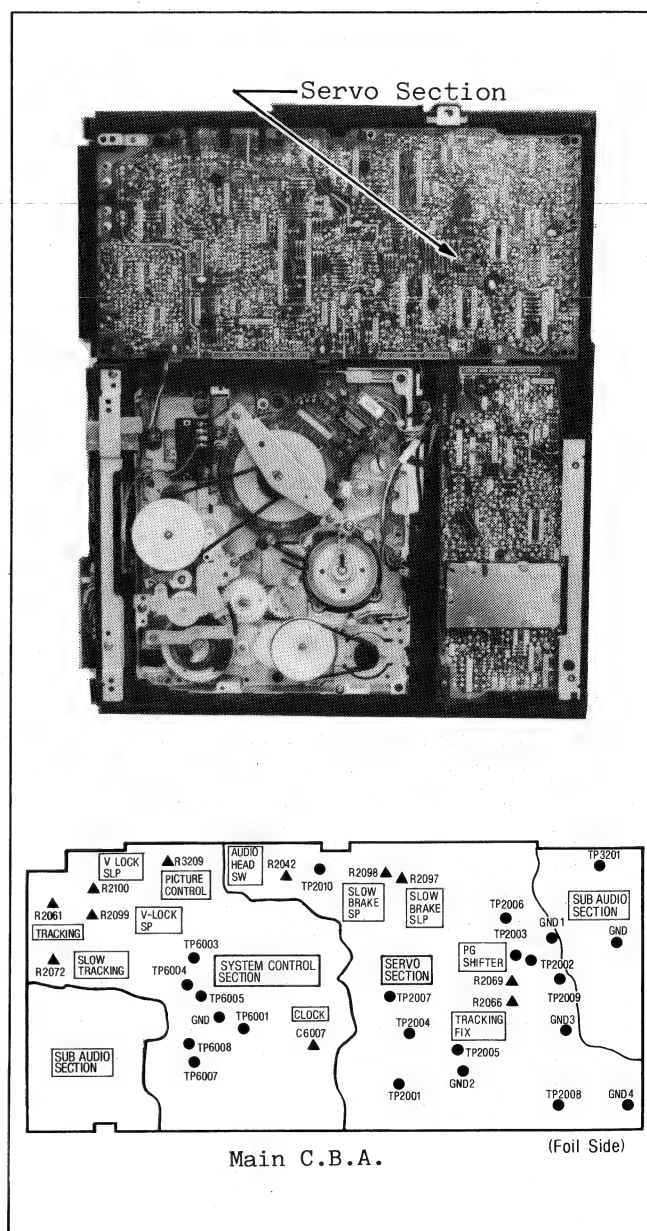


Fig. E2

2-1-1. HEAD SWITCHING POSITION ADJUSTMENT

Test Points : TP2003, TP3201
Adjustment : R2069 (PG SHIFTER)

1. Playback color bar section of the alignment tape.
2. Connect the scope CH 1 to TP3201 on the Sub Audio Section and CH 2 to TP2003 on the Servo Section. Set the scope to the CHOP mode.
3. Also set the scope to the Delay mode or expand the vertical interval of the signal from TP3201.
4. Adjust the PG SHIFTER (R2069) so that the head switching point is $6 (+/- 1)$ H before the start of vertical sync as shown below.

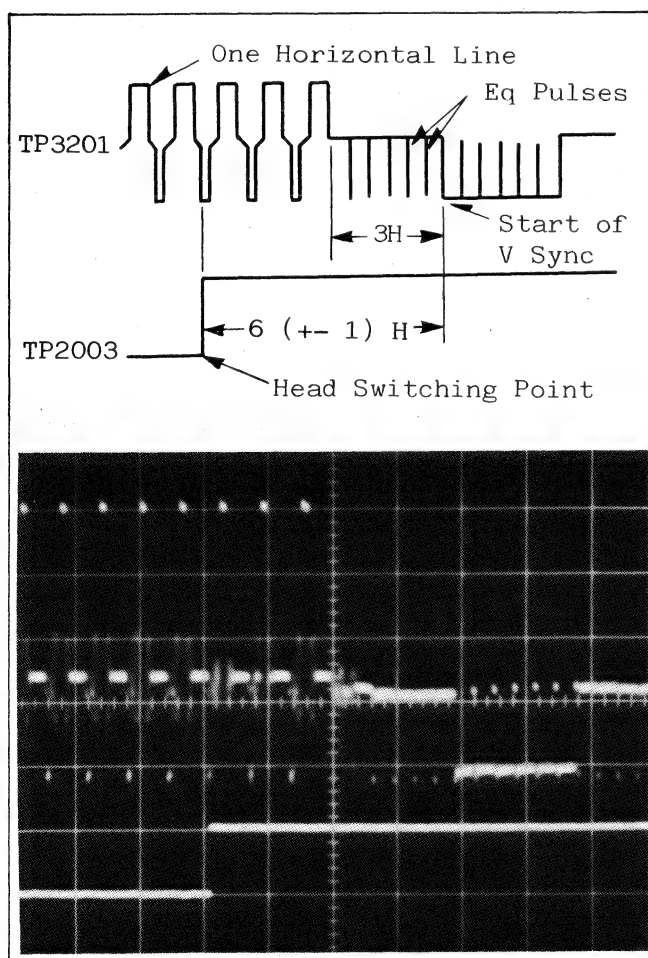


Fig. E3 TP3201 0.5V/0.1msec. div.
TP2003 5V/0.1msec. div.

5. Change the slope selector on the scope from "+" to "-" and make sure that the other switching point is also $6 (+/- 1)$ H before the beginning of vertical sync.

2-1-2. TRACKING FIX ADJUSTMENT

Test Points : TP2002, TP2003
Adjustment : R2066 (TRACKING FIX)

1. Supply a video signal to the Video Input on the rear panel or tune in a local TV program.
2. Set the Tracking Control on the front panel to the center detent point.
3. Insert a cassette tape and make a recording in the SP mode for a few minutes.
4. Playback the portion just recorded.
5. Connect the scope CH 1 to TP2003 and CH 2 to TP2002 on the Servo Section.
6. Adjust the TRACKING FIX (R2066) so that the is $7.3 (+/- 0.4)$ msec.

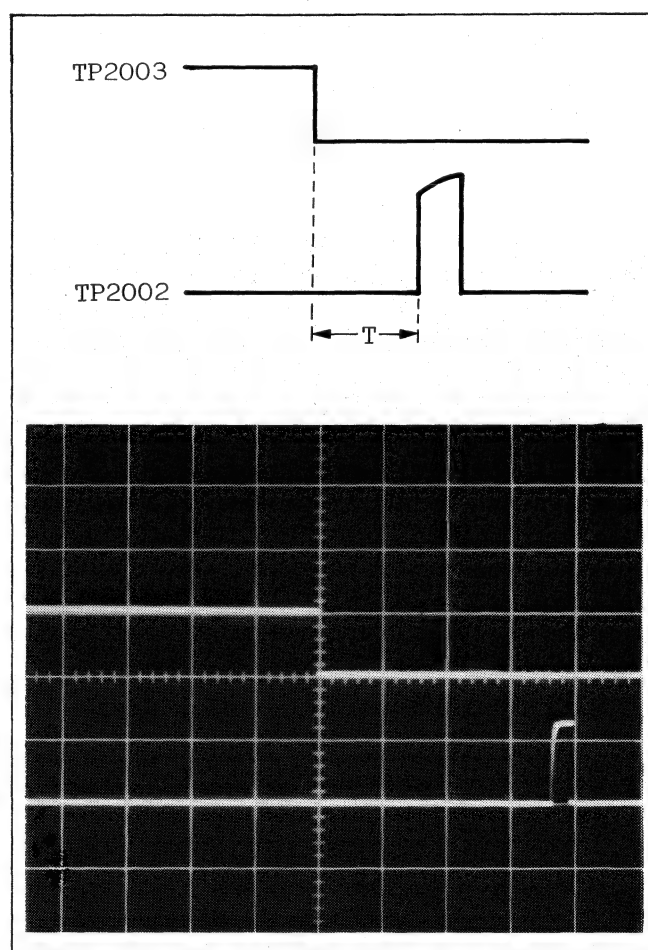


Fig. E4 TP2003 5V/2msec. div.
TP2002 1V/2msec. div.

2-1-3. SLOW BRAKE ADJUSTMENT

Test Points : TP2006, TP2007
Adjustments : R2098 (SLOW BRAKE-SP)
R2097 (SLOW BRAKE-SLP)

1. Supply a video signal to the video Input on the rear panel or tune in a local TV program.
2. Insert a cassette tape and make a recording in the SP mode for a few minutes.
3. Playback the portion just recorded.
4. Press the Slow/FA key on the front panel.
5. Connect the scope CH 1 to TP2007 and CH 2 to TP2006 on the Servo Section. Set the scope to the CHOP mode.
6. Adjust the SLOW BRAKE-SP (R2098) so that the A-portion is as shown below.

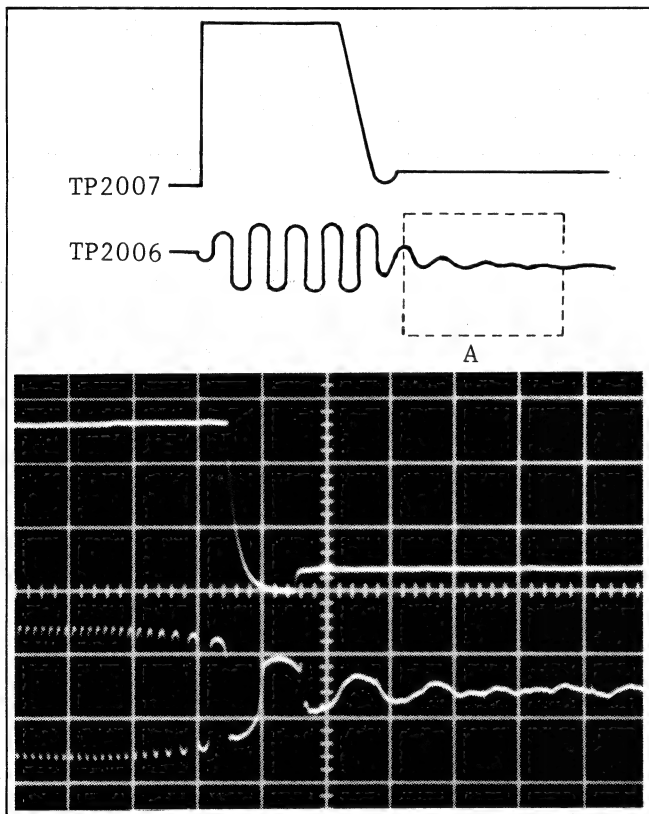


Fig. E5 TP2007 0.2V/10msec. div.
TP2006 0.5V/10msec. div.

7. In case of misadjustment, A-portion is as shown in Fig. E6.

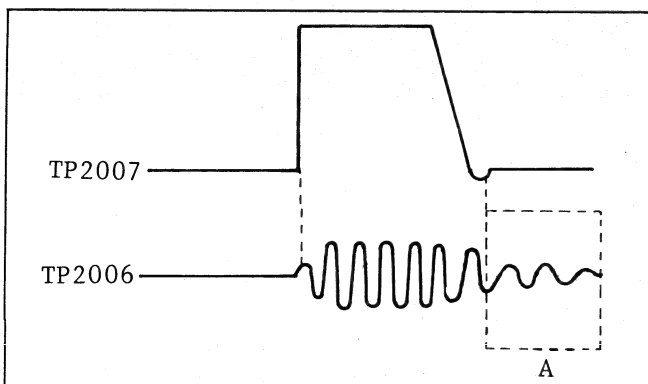


Fig. E6

8. Then, change to SLP and make a recording for a few minutes.
9. Playback the portion just recorded.
10. Press the Slow/FA key on the front panel.
11. Adjust the Slow BRAKE SLP (R2097) same as in the SP mode.

2-1-4. V LOCK ADJUSTMENT

Equipment : TV Monitor

Adjustments: R2100 (V-LOCK-SLP)
R2099 (V-LOCK-SP)

1. Supply a color bar signal to the Video Input on the rear panel or tune in a local TV program.
2. Insert a cassette tape and make a recording in the SLP mode for a few minutes.
3. Playback the portion just recorded.
4. Set the slow tracking VR on the front panel to the center detent point.
5. Push the PAUSE/STILL key.
6. Adjust the V-LOCK-SLP (R2100) on the System Control Section so that the center of picture is most stable.

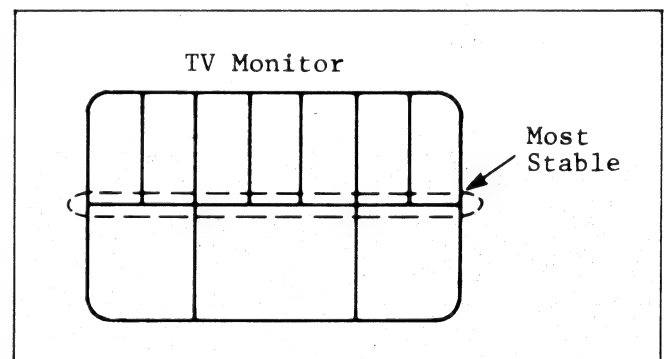


Fig. E7

7. Place the unit in SP mode and make a recording for a few minutes.
8. Playback the portion just recorded, and push the PAUSE/STILL key.
9. Adjust the V-LOCK-SP (R2099) on the System Control Section so that the center of picture is most stable.

2-1-5. AUDIO HEAD SWITCHING POSITION ADJUSTMENT

Test Points : TP2003, TP2010, TP4202
Adjustment : R2042 (AUDIO HEAD SW.)

1. Supply the video signal to the Video Input on the rear panel or tune in a local TV program.
2. Insert a cassette tape and make a recording in the SP mode.
3. Connect the scope CH 1 to TP2003 and CH 2 to TP2010 on the servo section.
4. Playback the portion just recorded.
5. Adjust the AUDIO HEAD SW. (R2042) so that the TA is 5.5 (+/- 0.1) msec.

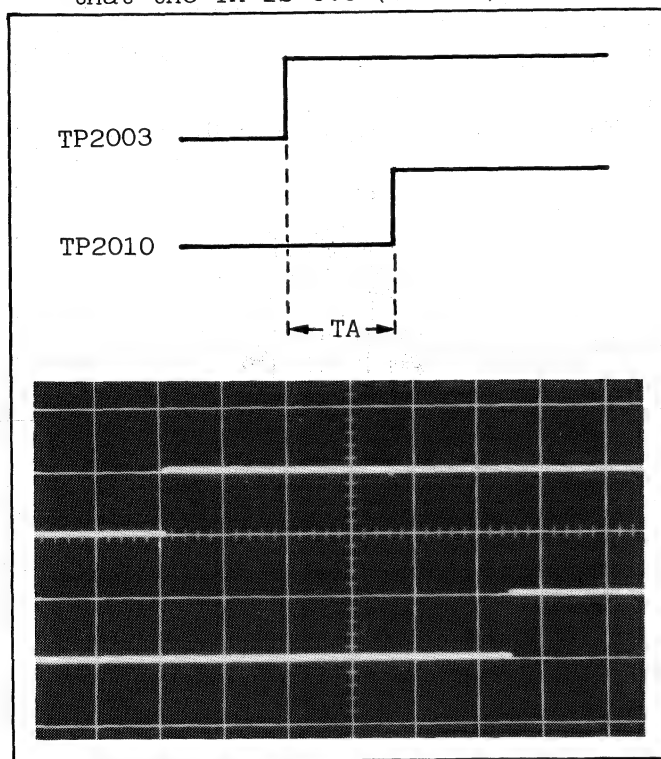


Fig. E8-1 TP2003 5V/1msec. div.
TP2010 5V/1msec. div.

(Confirmation)

6. Playback the portion just recorded and confirm that the envelope at TP4202 is as shown in Fig. E8-2.

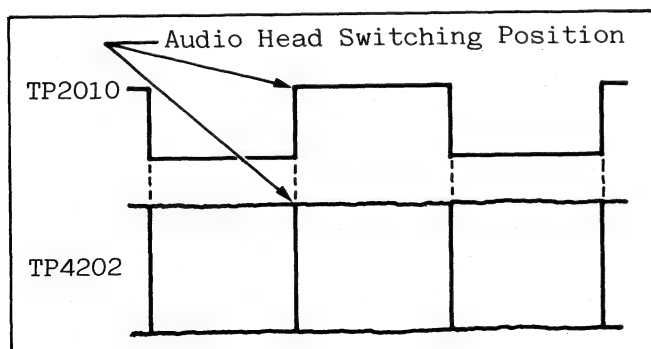


Fig. E8-2

7. If the envelope has the Drop Out (A-portion in Fig. E8-3), adjust the AUDIO HEAD SW. (R2042) so that the audio envelope has no drop out portion as shown in Fig. E8-2.

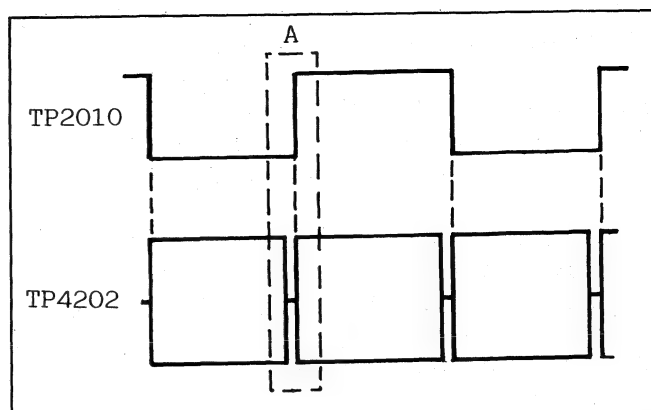


Fig. E8-3

2-2. AUDIO SECTION

2-2-1. NORMAL AUDIO SECTION

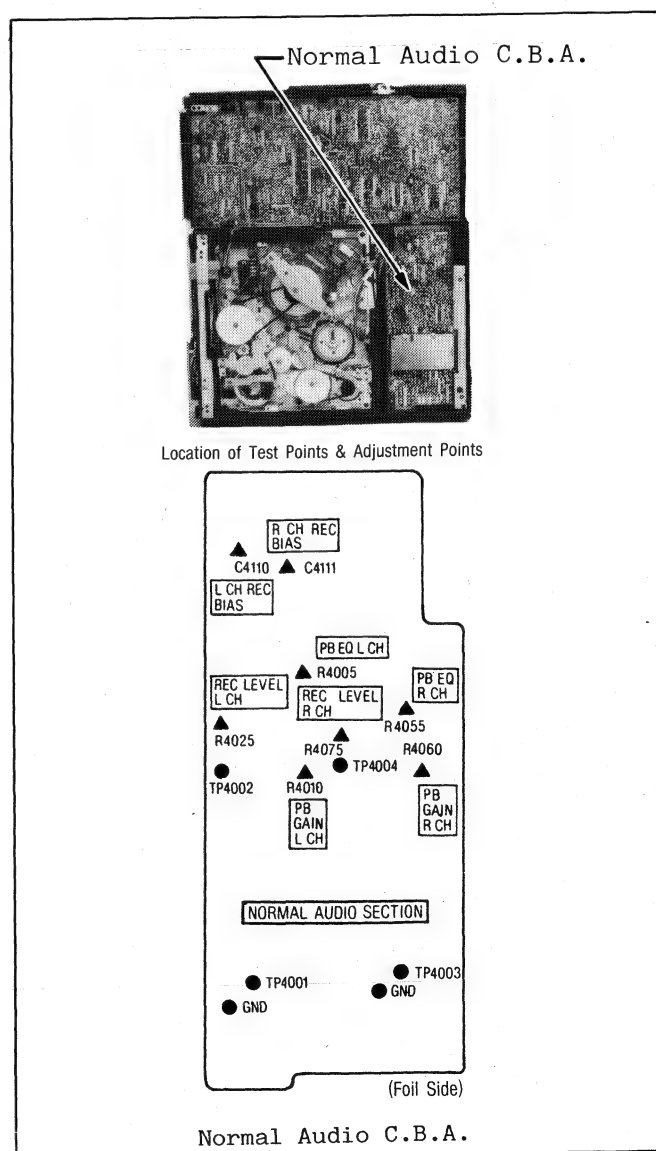


Fig. E9

2-2-1-1. BIAS CURRENT ADJUSTMENT

Test Point : Audio Head Terminal (L, R)
Adjustment : C4110 (L CH, REC BIAS)
C4111 (R CH, REC BIAS)

1. Plug in a phono plug to the Audio Input, but do not supply any audio signal to the AUDIO INPUT on the rear panel.
2. Insert a cassette tape and make a recording in the SP mode.
3. Connect the AC Millivolt Meter or scope as shown in Fig. E10.

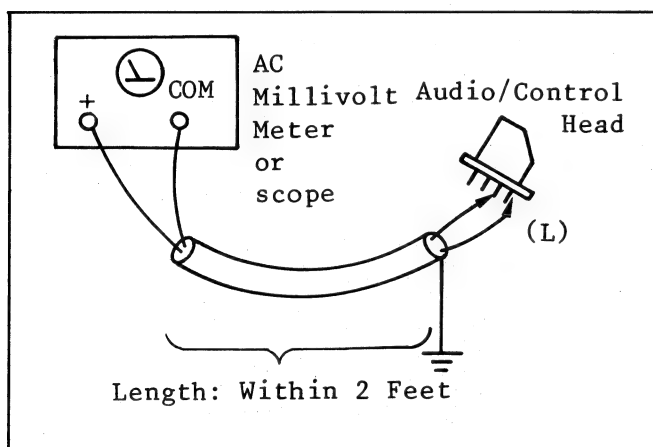


Fig. E10

4. While the recording is taking place, adjust the L CH REC BIAS (C4110) on the Normal Audio Section so that the voltage is within the specification.
5. Change the connected point of the AC Millivolt Meter or scope as shown in Fig. E11.

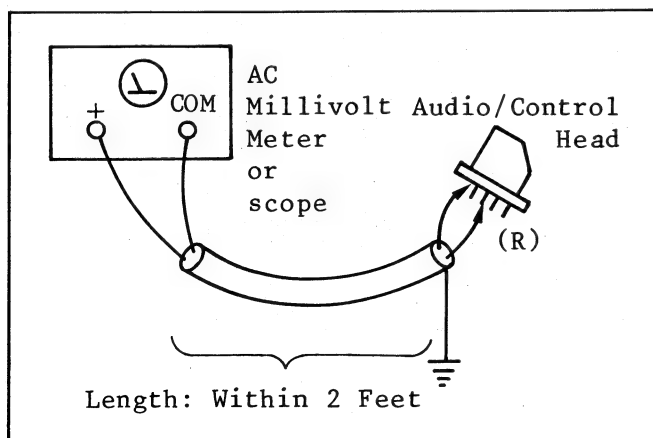


Fig. E11

6. During recording, adjust the R CH REC BIAS (C4111) on the Normal Audio Section so that the voltage is within the specification.
(Specification should be decided by the color of the dot on A/C Head.)

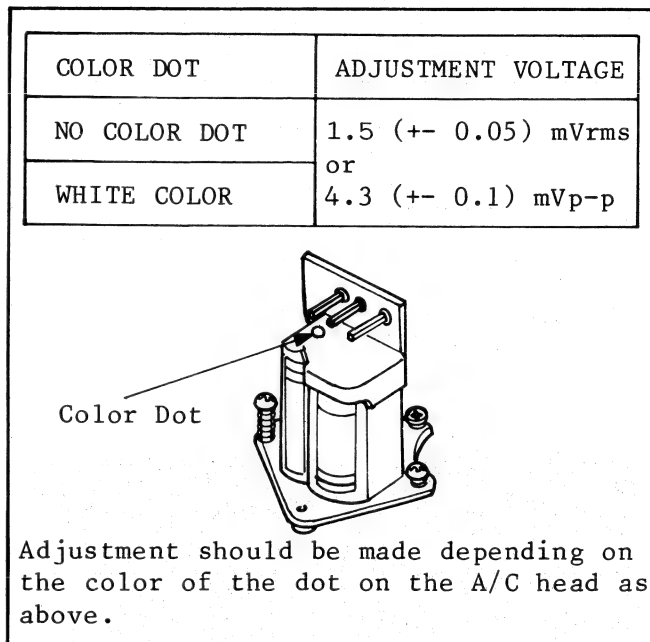


Fig. E12

7. Remove the AC Millivolt Meter or scope.

Note:

For Service replacement, A/C Head without color dot is supplied.

2-2-1-2. PLAYBACK GAIN ADJUSTMENT

Test Points : TP4001 (L CH)
TP4003 (R CH)

Adjustments : R4010 (PB GAIN-L CH)
R4060 (PB GAIN-R CH)

1. Playback Multi-Burst section (1kHz Audio) of the alignment tape (VFMS0001H6).
2. Connect the scope CH 1 to TP4001 and CH 2 to TP4003 on the Normal Audio Section.
3. Set the DOLBY NR Switch on the front panel to OFF.
4. Set the scope to CH 1 mode and adjust the PB GAIN-L CH (R4010) on the Normal Audio Section so that the level of waveform is 300 (± 15)mVp-p.

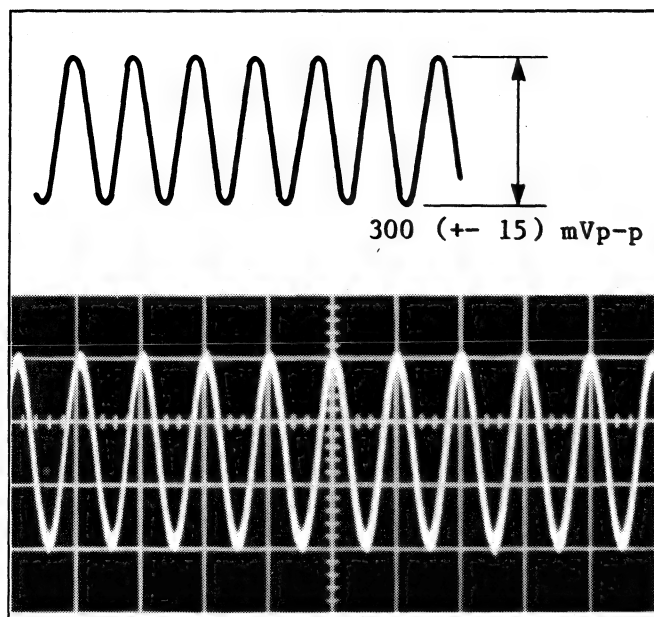


Fig. E13 TP4001 0.1V/1msec. div.

5. Set the scope to CH 2 mode and adjustment PB GAIN-R CH (R4060) on the Normal Audio Section so that the level of waveform is 300 (+/- 15) mVp-p.

2-2-1-3. Recording Gain Adjustment

Test Points : TP4001, TP4003

Adjustments : R4025 (REC LEVEL-L CH)
R4075 (REC LEVEL-R CH)

(L Channel)

1. Connect the Signal Generator to AUDIO IN (L) jack on the rear panel.
2. Supply a sinewave signal (1KHz, -10dB, 890mVp-p) from the Signal Generator.
3. Set the DOLBY NR Switch on the front panel to OFF.
4. Place the unit in SP recording mode.
5. Connect the scope to TP4001 on the Normal Audio Section and set the recording level at approx. 1.3 Vp-p as a starting point of this adjustment.
6. Playback the portion just recorded and read the level of Playback.
7. Confirm that the Recording level and Playback level are the same level.
8. If the Recording level and Playback level aren't the same. During Recording, turn the REC LEVEL-L (R4025) to slightly increase or decrease the signal level.
9. Repeat above step 4 to 8 until Recording level and Playback level are the same.

(R Channel)

1. Connect the signal Generator to AUDIO IN (R) jack on the rear panel.
2. Supply a sinewave signal (1KHz, -10dB, 890mVp-p) from the Signal Generator.
3. Place the unit in SP recording mode.
4. Connect the scope to TP4003 on the Normal Audio Section and set the recording level at approx. 1.3Vp-p as a starting point of this adjustment.
5. Playback the portion just recorded and read the level of playback.
6. Adjust the REC LEVEL-R (R4075) as is done in L channel adjustment.

2-2-1-4. Overall Frequency Response Adjustment

Test Points : TP4001 (L CH)
TP4003 (R CH)

Adjustments : R4005 (PB EQ-L CH)
R4055 (PB EQ-R CH)

1. Supply the color bar signal to the Video Input on the rear panel.
2. Supply a sinewave signal (1KHz and 5KHz, 40dB, 28mVp-p) to either Audio Input L CH or R CH on the rear panel.
3. Connect the AC Millivolt Meter to TP4001 on the Normal Audio Section.
4. Insert a cassette tape and make a recording in SP mode 1KHz first, then 5KHz.
5. Connect the phono plug to Audio Out jack (R CH).
6. Playback the portion just recorded.
7. Adjust PB EQ-L CH (R4005) on the Normal Audio Section so that the 1KHz and 5KHz outputs are balanced.
8. Then, connect the AC Millivolt Meter to TP4003 on the Normal Audio Section.
9. Remove the phono plug from Audio Out jack (R CH), then connect the phono plug to Audio Out jack (L CH).
10. Playback the portion just recorded.
11. Adjust the PB EQ-R CH (R4055) on the Normal Audio Section so that the 5KHz output is 0 (+/- 0.5) dB of 1KHz output.
12. Remove the AC Millivolt Meter and the Phono plug.

2-2-2. FM AUDIO SECTION

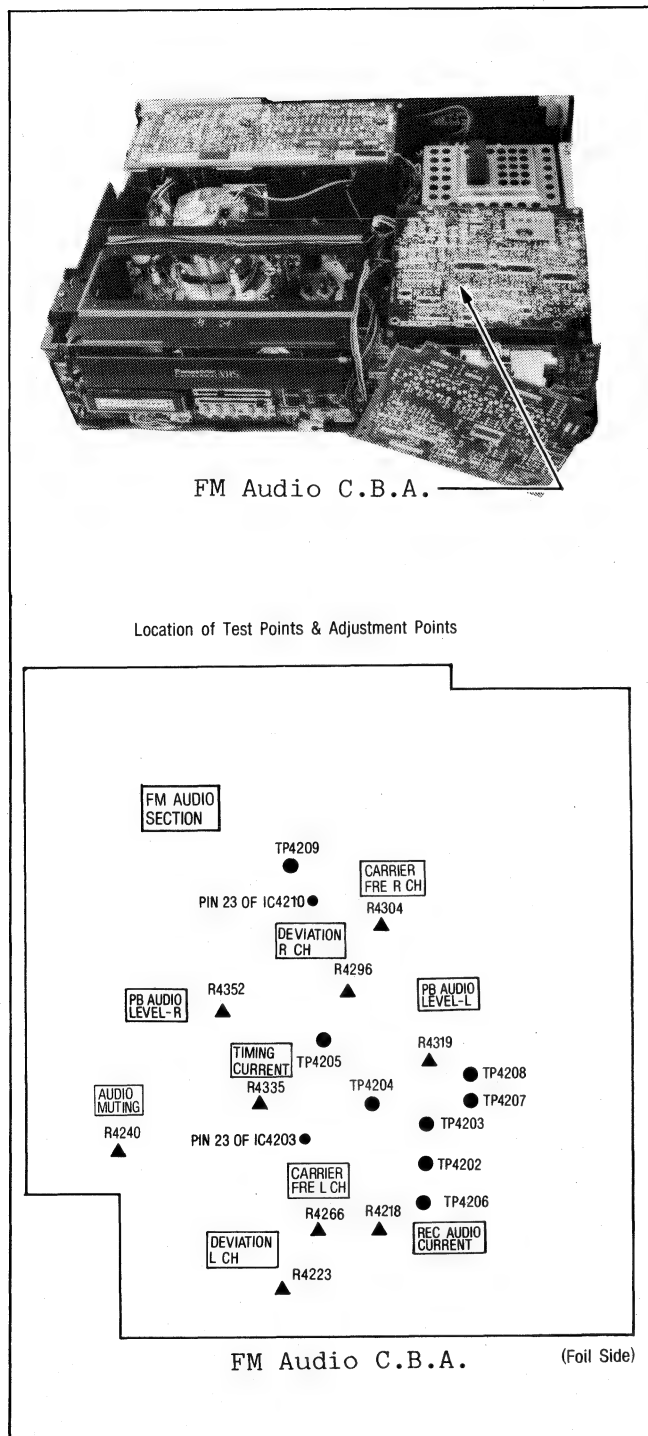


Fig. E14

When Servicing the FM Audio C.B.A., take notice of following items.

1. Disconnect the AC plug from the AC outlet.

2. Remove the 2 Screws (A), then remove the FM Audio C.B.A. When removing the FM Audio C.B.A., and keeping it tilted up, move it away from the front of the unit to free it.

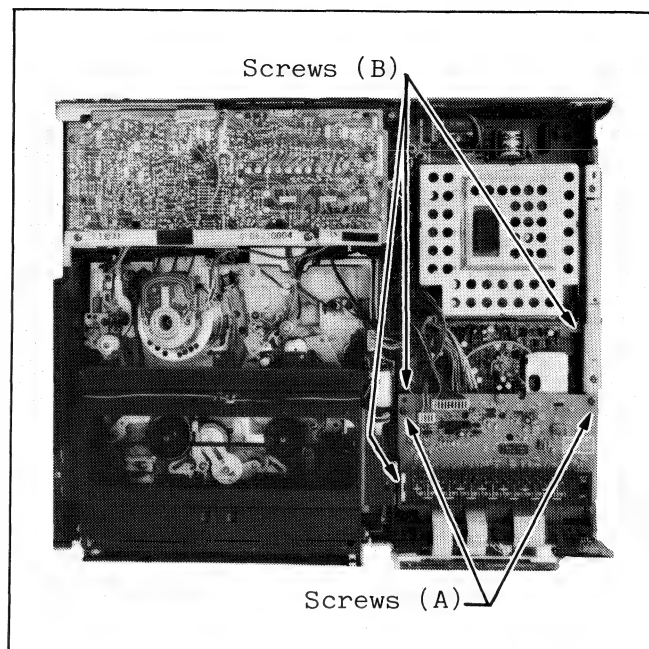


Fig. E15

3. Remove the Shield Plate on the FM Audio C.B.A. by removing the 3 plastic rivets that secure it to the C.B.A. Then lay the Shield Plate on the Cassette up Unit, underneath the C.B.A. Let the C.B.A. rest on the Shield Plate as shown in Fig. E14.

2-2-2-1. CARRIER FREQUENCY AND AUDIO DEVIATION ADJUSTMENT

Test Points: TP4203, TP4206, pin23 of IC4203, pin 23 of IC4210

Adjustments: R4266 (CARRIER FRE-L)
R4304 (CARRIER FRE-R)
R4223 (DEVIATION - L)
R4296 (DEVIATION - R)

A:L-CHANNEL

(A-1, Carrier Frequency Adjustment)

1. Set the Input Select Switch on the front panel to LINE mode.
2. Connect the Phono plug to Audio IN jack (L CH) to complete no signal condition.

3. Place the unit in STOP mode.
4. Connect the frequency counter to TP4203 on the FM Audio Section.
5. Adjust the CARRIER FRE-L (R4266) so that the frequency is 1300 (+- 5) KHz.

(A-2, Audio Deviation Adjustment)

6. Connect the DVM to pin 23 of IC4203 on the FM Audio section and read the voltage level.
7. Connect the pin 23 of IC4203 to GND through the resistor and the variable resistor (500k Ω) as shown below.

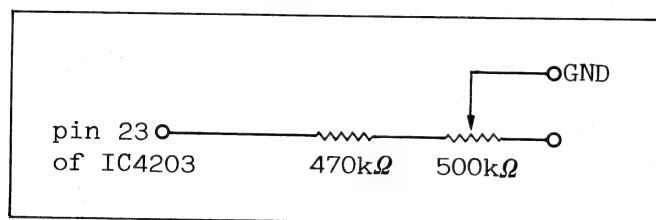


Fig. E16

8. Turn the variable resistor (500k Ω) so that the frequency is 1250 (+- 2) KHz. Then read the voltage level at pin 23 of IC4203.
9. Remove the DVM, resistor and the variable resistor.
10. Remove the Phono plug. Then supply a sinewave signal (1KHz, -20dB, 283mVp-p) to Audio IN (L) jack on the rear panel.
11. Connect the AC Millivolt Meter or scope to pin 23 of IC4203.
12. Calculate "A" using the formula below.
13. Adjust the DEVIATION -L (R4223) on the FM Audio Section so that the voltage level is the same as calculated in step 12.

$$\text{AC Millivolt Meter}(V_{\text{rms}}) = \frac{V}{\sqrt{2}} = A$$

V : Voltage difference between step 6 and step 8

B:R-CHANNEL

(B-1, Carrier Frequency Adjustment)

1. Set the Input Select Switch on the front panel to LINE mode.
2. Connect the Phono plug to Audio IN jack (R CH) to complete no signal condition.

3. Place the unit in STOP mode.
4. Connect the frequency counter to TP4206 on the FM Audio Section.
5. Adjust the CARRIER FRE-R (R4304) so that the frequency is 1700 (+- 5) KHz.

(B-2, Audio Deviation Adjustment)

6. Connect the DVM to pin 23 of IC4210 on the FM Audio Section and read the voltage level.
7. Connect the pin 23 of IC4210 to GND through the resistor and the variable resistor as shown Fig. E16.
8. Turn the variable resistor (500k Ω) so that the frequency is 1650 (+- 2) KHz. Then read the voltage level at pin 23 of IC4210.
9. Remove the DVM, resistor and the variable resistor.
10. Remove the Phono plug. Then supply a sinewave signal (1KHz, -20dB, 283mVp-p) to Audio IN(R) jack on the rear panel.
11. Connect the AC Millivolt Meter or scope to pin 23 of IC4210.
12. Adjust the DEVIATION-R(R4296) on the FM Audio Section as is done in L channel Adjustment.

2-2-2-2. AUDIO RECORDING CURRENT ADJUSTMENT

Test Points : TP4207, TP4208
Adjustment : R4218 (REC-AUDIO-CURR)

1. Set the Input Select Switch on the front panel to LINE mode.
2. Connect the Phono plug to Audio IN jack (L CH).
3. Insert a cassette tape and make a recording in the SP mode.
4. Connect the scope between TP4207(HOT) and TP4208(GND) on the FM Audio Section.
5. Adjust the A-REC CURR (R4218) on the FM Audio Section so that the level of waveform is 260 (+- 10) mVp-p.

2-2-2-3. TIMING CURRENT ADJUSTMENT

Test Points : TP4204, TP4205
Adjustment : R4335 (TIMING CURR)

1. Set the Input Select Switch on the front panel to LINE mode.

2. Supply a sinewave signal (1KHz, -20dB, 283mVp-p) to either Audio Input L CH or R CH on the rear panel.
3. Place the unit in STOP mode.
4. Connect the DC Millivolt Meter between TP4204(HOT) and TP4205(GND) on the FM Audio Section.
5. Adjust the TIMING CURR (R4335) on the FM Audio Section so that the voltage is 15.0 (+- 0.1) mVDC.

2-2-2-4. AUDIO PLAYBACK LEVEL ADJUSTMENT

Test points : Audio out jack (L), (R)
Adjustments : R4319 (PB AUDIO LEVEL-L)
R4352 (PB AUDIO LEVEL-R)

(L-channel)

1. Set the Input Select Switch on the front panel to LINE mode.
2. Supply a sinewave signal(1KHz, -20dB, 283mVp-p) to either Audio Input L CH or R CH on the rear panel.
3. Insert a cassette tape and make a recording in the SP mode.
4. Push the HiFi button and L/R button on the front panel.
Then, connect the phono plug to the Audio out jack (R) on the rear panel.
5. Connect the scope to Audio out jack(L) on the rear panel and read the level of recording.
6. Playback the portion just recorded and read the level of playback.
7. Adjust the PB AUDIO LEVEL-L(R4319) so that the Recording level and playback level are the same level.

(R-channel)

1. Set the Input Select Switch on the front panel to LINE mode.
2. Supply a sinewave signal (1KHz, -20dB, 283mVp-p) to either Audio Input L CH or R CH on the rear panel.
3. Insert a cassette tape and make a recording in the SP mode.
4. Push the HiFi button and L/R button on the front panel.
Then, connect the phono plug to the Audio out jack (L) on the rear panel.
5. Connect the scope to Audio out jack (R) on the rear panel and read the level of recording.
6. Playback the portion just recorded and read the level of playback.
7. Adjust the PB AUDIO LEVEL-R(R4352) so that the Recording level and Playback level are the same level.

2-2-2-5. AUDIO MUTING ADJUSTMENT

Test Point : TP4202

Adjustment : R4240 (AUDIO MUTING)

1. Set the Input Select Switch on the front panel to LINE mode.
2. Connect the Phono plug to Audio IN jack (L CH).
3. Push the HiFi button and L/R button on the front panel.
4. Turn the Tracking Control on the front panel to center detent point.
5. Insert a cassette tape and make a recording in SP mode for a few minutes.
6. Playback the just Recorded portion.
7. Connect the scope to TP4202 on the FM Audio Section.
8. Adjust the Tracking VR so that the amplitude of the signal at TP4202 is reduced to 1/3.
9. First adjust AUDIO MUTING (R4240) until the HiFi indication on the front panel turns OFF.
10. Then slowly adjust AUDIO MUTING (R4240) to the point where the HiFi indication just turns ON.
11. Confirm that the sounds on CH-L and CH-R do not contain abnormal sound.

2-3. LUMINANCE AND CHROMINANCE SECTION

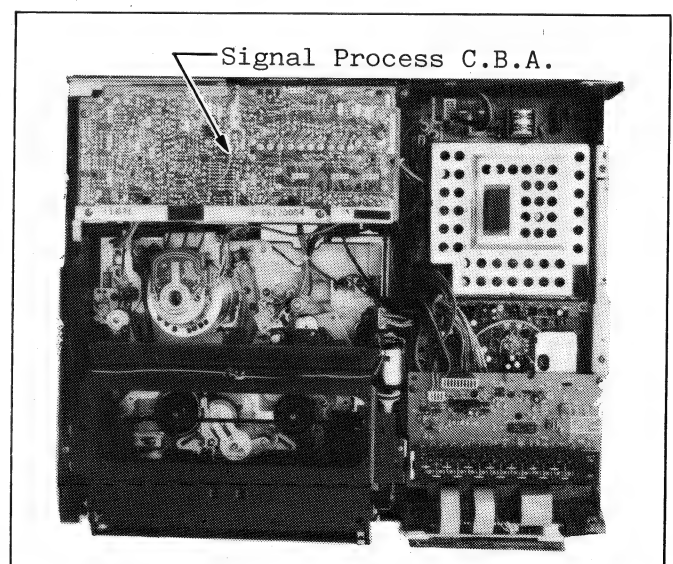


Fig. E17

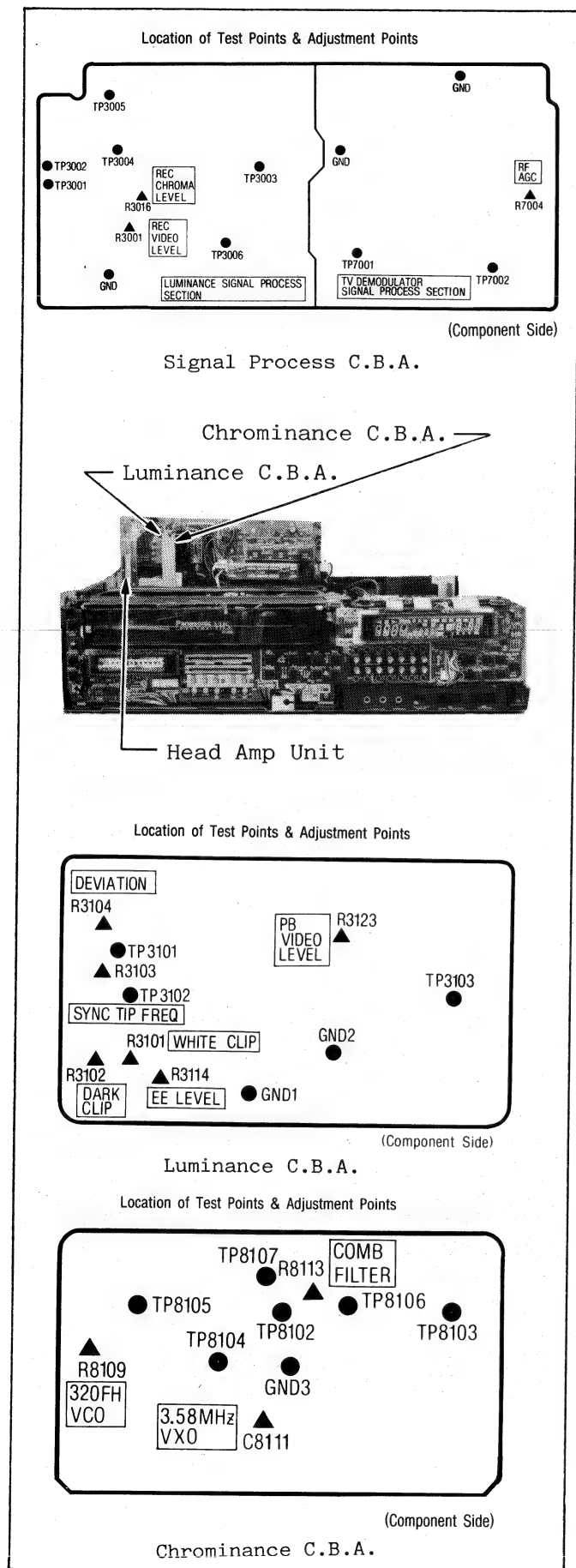


Fig. E18

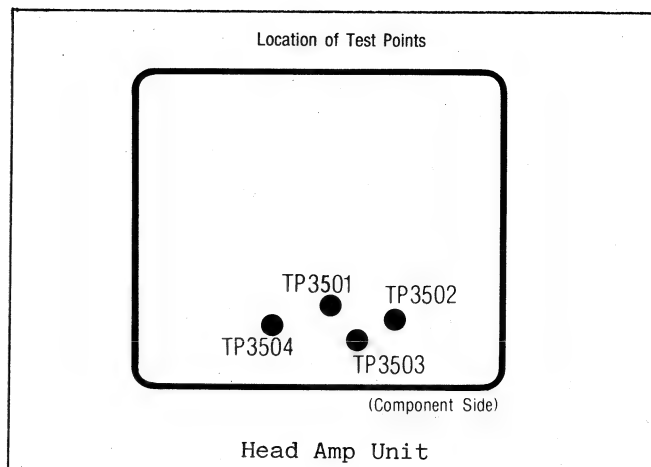


Fig. E19

2-3-1. E-E LEVEL ADJUSTMENT

Test Point : TP3004

Adjustment : R3114 (E-E LEVEL)

1. Supply an NTSC Color Bar Signal W/White Window (1Vp-p) to the Video Input on the rear panel.
2. Connect the scope to TP3004 on the Signal Process C.B.A.
3. Place the unit in STOP mode.
4. Adjust the E-E LEVEL (R3114) on the Luminance C.B.A. so that the video level is 2.0 (+/- 0.1) Vp-p.

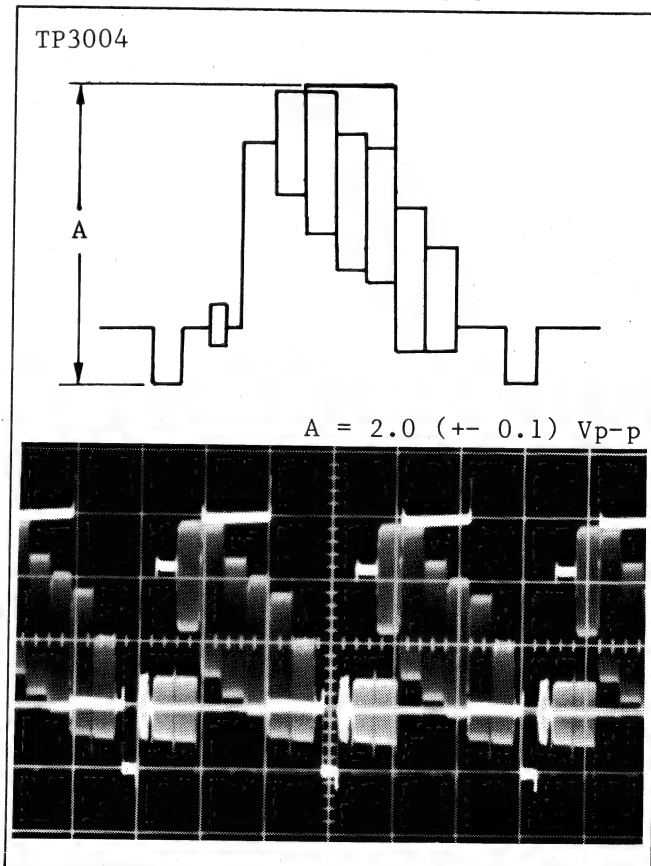


Fig. E20 TP3004 0.5V/20 u-sec. div.

2-3-2: SYNC TIP FREQUENCY AND DEVIATION ADJUSTMENT

Test Points : TP3501, TP3504, TP3002

Adjustments : R3103 (SYNC TIP FREQ)
R3104 (DEVIATION)

(A-1, Sync Tip Frequency Adjustment)

1. Plug in a phono plug to the Video Input on the rear panel, but do not supply video signal.
2. Connect the frequency counter to TP3002 on the Luminance Signal Process Section.
3. Insert a cassette tape and place the unit in LP REC mode.
4. Adjust the SYNC TIP FREQ (R3103) so that the frequency is 3.4 (+/- 0.04) MHz.
5. Remove the frequency counter.

(A-2, Deviation Adjustment)

6. Turn the WHITE CLIP (R3101) and the DARK CLIP (R3102) to fully counterclockwise from the component side.
7. Turn the REC VIDEO LEVEL (R3001) to fully counterclockwise and the REC CHROMA (R3016) to fully clockwise from the component side.
8. Connect a signal generator (sinewave) to TP3001 through the resistor (1k Ω). Set the frequency and the output level of the signal generator.
Frequency : 4.35 (+/- 0.04) MHz
Output Level : 0.1Vp-p

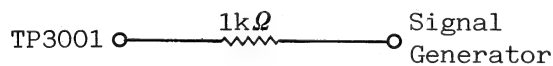


Fig. E21

9. Supply an NTSC Color Bar Signal (1Vp-p) to the Video Input on the rear panel.
10. Connect the scope to TP3501 (HOT) and TP3504 (GND) on the Head Amp Section. Use TP3006 as a trigger.
11. Turn the DEVIATION (R3104) to fully clockwise from the component side. Then slowly adjust the DEVIATION (R3104) so that maximum inner beat is procedure as shown in Fig. E22.

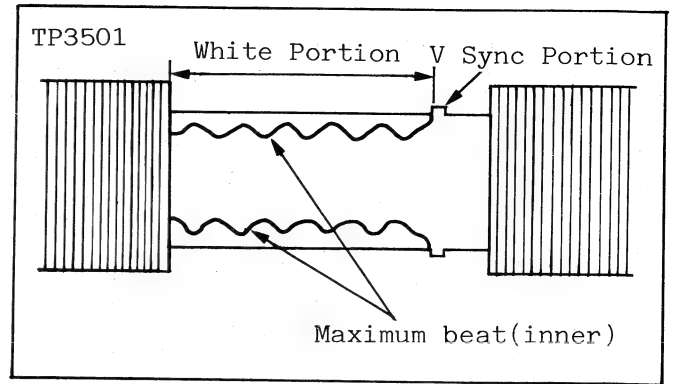


Fig. E22

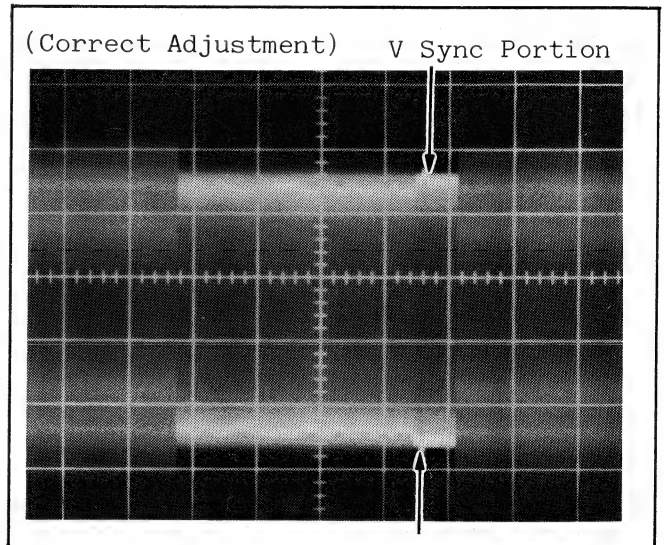


Fig. E23 TP3501 20mV/2msec. div.

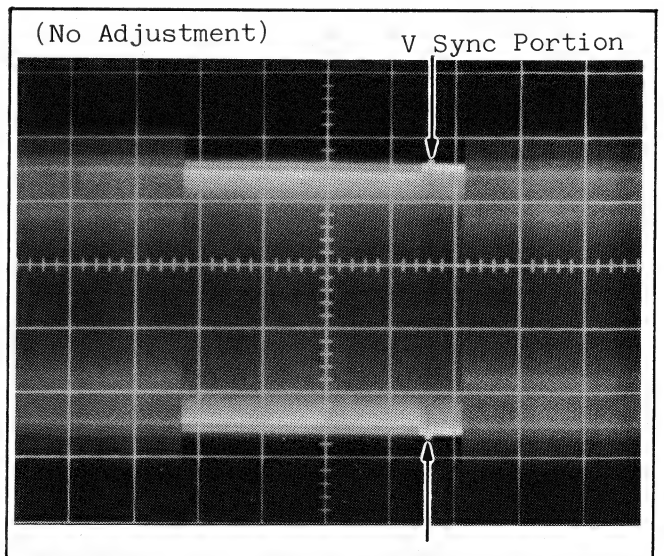


Fig. E24 TP3501 20mV/2msec. div.

Note : Inner beat is used for this adjustment but not outer beat as shown in Fig. E25.

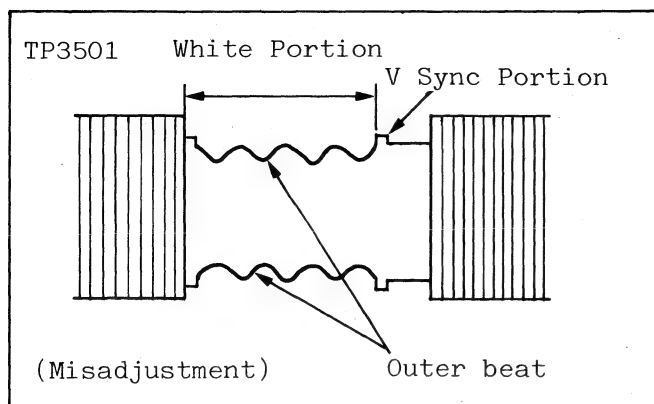


Fig. E25

12. Remove the resistor and a signal generator.
13. Make WHITE and DARK CLIP adjustment and Recording Current adjustment.

2-3-3. WHITE AND DARK CLIP ADJUSTMENT

Test Point : TP3101

Adjustments: R3101 (WHITE CLIP)
R3102 (DARK CLIP)

1. Supply an NTSC color Bar Signal W/White Window to the Video Input on the rear panel.
2. Connect the scope to TP3101 on the Luminance C.B.A.
3. Place the unit in SP REC mode.
4. Adjust the WHITE CLIP (R3101) and the DARK CLIP (R3102) on the Luminance C.B.A. so that the overshoot and undershoot are as shown in Fig. E26.

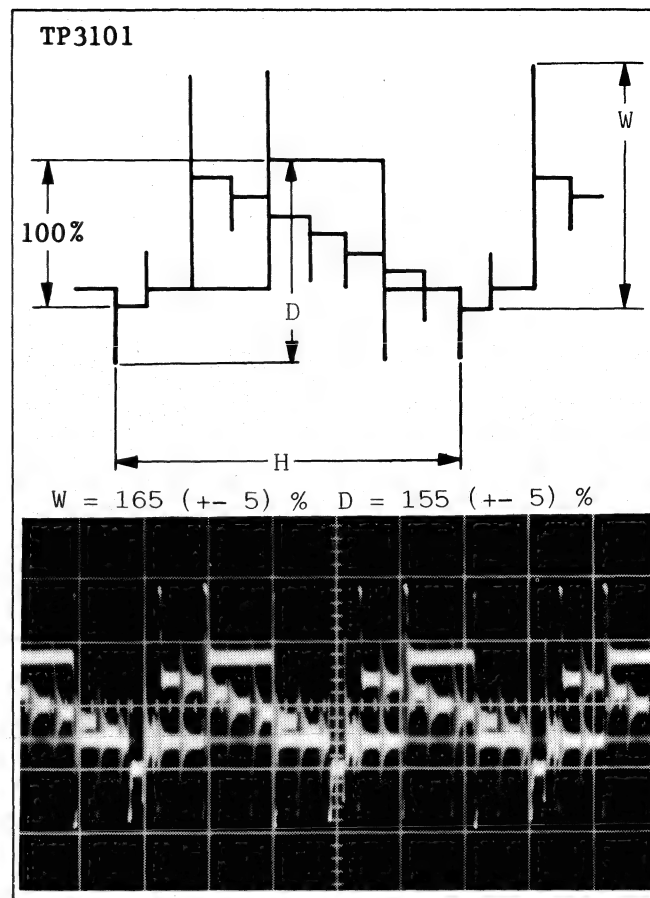


Fig. E26 TP3101 0.2V/20 u-sec. div.

2-3-4. RECORDING CURRENT ADJUSTMENT

Test Points : TP3004, TP3006, TP3501, TP3504
Adjustments : R3001 (REC VIDEO LEVEL)
R3016 (REC CHROMA LEVEL)

1. Supply an NTSC color Bar Signal W/White Window to the Video Input on the rear panel.
2. Insert a cassette tape and make a recording in the LP mode.
3. Connect the scope between TP3501 (HOT) and TP3504 (GND) on the Head Amp Section.
4. Turn the REC VIDEO LEVEL (R3001) fully counterclockwise from the component side.
5. Set the scope 20mV/div., 10 u-sec/div. Use TP3004 as scope trigger.
6. Adjust the REC CHROMA (R3016) on the Luminance Signal Process Section so that the level of cyan portion is 36 (+- 3) mVp-p.

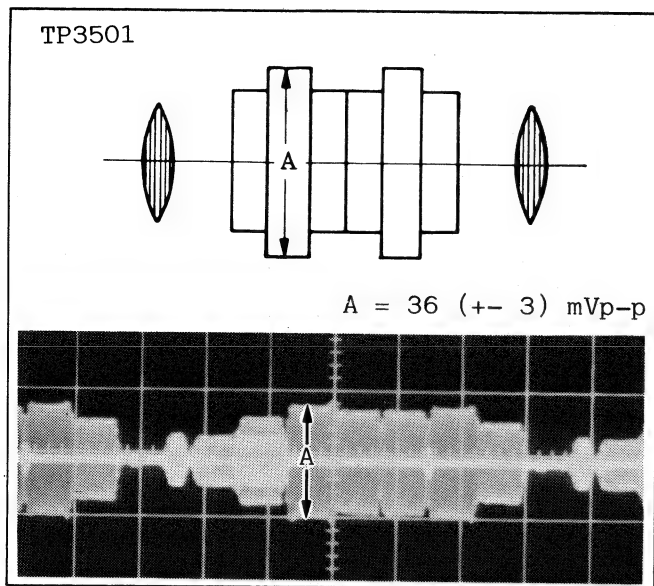


Fig. E27 TP3501 20mV/10 u-sec. div.

7. Then set the scope 20mV-div., 2msec/div.
Use TP3006 as scope trigger.
8. Adjust the REC VIDEO LEVEL (R3001) on the Luminance Signal Process Section so that the level of V sync portion is $110 (+- 3) \text{ mVp-p}$.

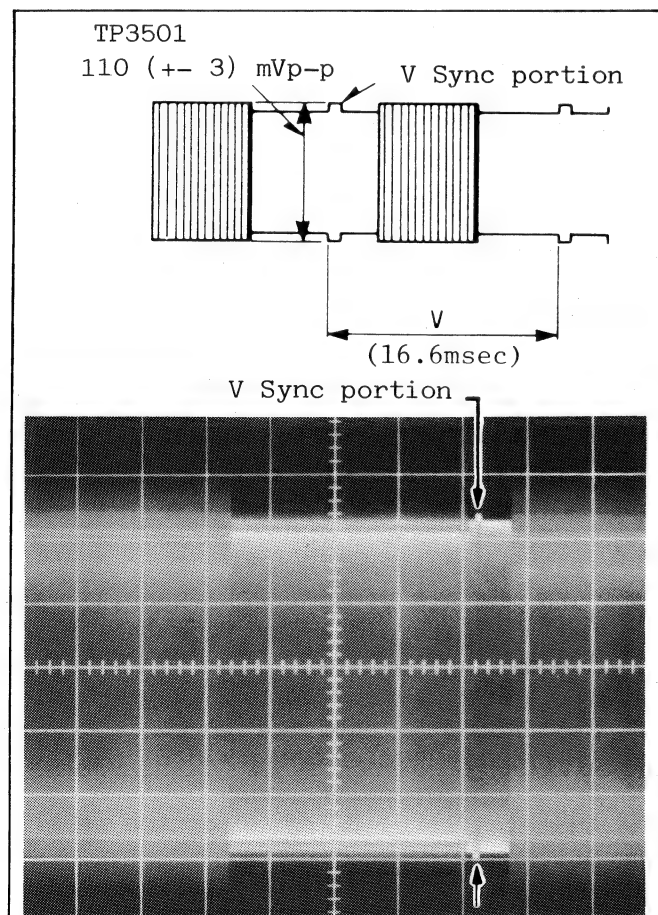


Fig. E28 TP3501 20mV/2msec. div.

2-3-5. 320FH VCO ADJUSTMENT

Test Point : TP8103

Adjustment : R8109 (320FH VCO)

1. Place the unit in STOP mode.
2. Connect the test point (TP8105) to Pin 3 of Chrominance C.B.A. through the resistor ($1\text{k}\Omega$) and the diodes (MA165).

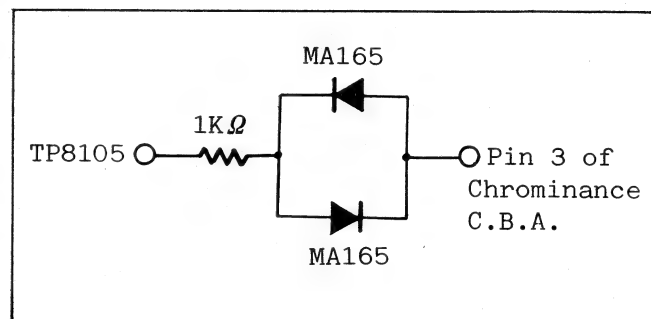


Fig. E29

3. Connect the frequency counter to TP8103 on the Chrominance C.B.A.
4. Adjust the 320FH VCO (R8109) from the component side on the Chrominance C.B.A. so that the frequency is $4.2 (+- 0.1) \text{ MHz}$.
5. Remove the frequency counter, resistor/diodes.

2-3-6. 3.58MHz VXO ADJUSTMENT

Test Point : TP8104

Adjustment : C8111 (3.58MHz VXO)

1. Place the unit in STOP mode.
2. Connect the test point (TP8102) to GND on the Chrominance C.B.A. through the resistor ($22\text{k}\Omega$) and the capacitor (0.01 u-F).

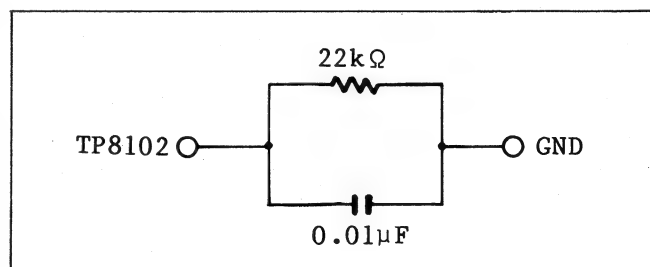


Fig. E30

3. Connect the frequency counter to TP8104 on the Chrominance C.B.A.

4. Adjust the 3.58MHz VXO (C8111) from the component side on the Chrominance C.B.A. so that the frequency is 3.579545 MHz (+- 20) Hz.
5. Remove the frequency counter, resistor/capacitor.

2-3-7. COMB FILTER ADJUSTMENT

Test Point: TP3004

Adjustment: R8113 (COMB FILTER)

1. Supply a color bar signal to the Video Input on the rear panel.
2. Insert a cassette tape and make a recording in the SLP mode.
3. Connect the scope to TP3004 on the Luminance Signal Process Section.
4. Playback the portion just recorded.
5. Turn the Tracking Control on the front panel for the poorest tracking. (Worst playback image.)
6. During playback, adjust the COMB FILTER (R8113) on the Chrominance C.B.A. from the component side as shown below.

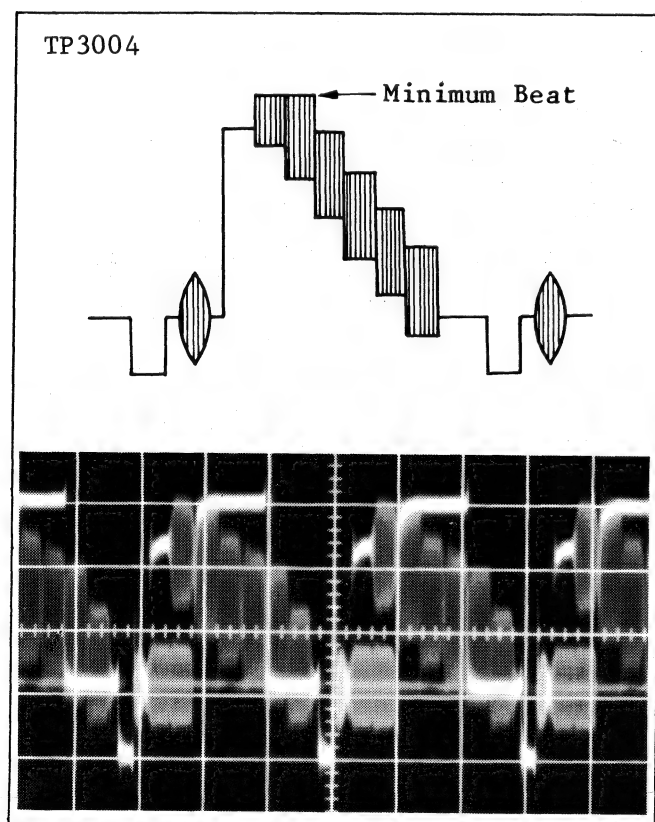


Fig. E31 TP3004 0.5V/20 u-sec. div.

2-3-8. PLAYBACK LEVEL ADJUSTMENT

Test Point: TP3004

Adjustment: R3123 (PB VIDEO LEVEL)

1. Supply an NTSC Color Bar Signal W/White Window (1Vp-p) to the Video Input on the rear panel.
2. Insert a cassette and make a recording in the SP mode for a few minutes.
3. Connect the scope to TP3004 on the Luminance Signal Process Section.
4. Playback the portion just recorded.
5. During playback, adjust the PB VIDEO LEVEL (R3123) on the Luminance C.B.A. so that the video level is 2.0 (+- 0.1) Vp-p.
6. Confirm that the level of cyan portion is 1.26 (+- 0.2) Vp-p.

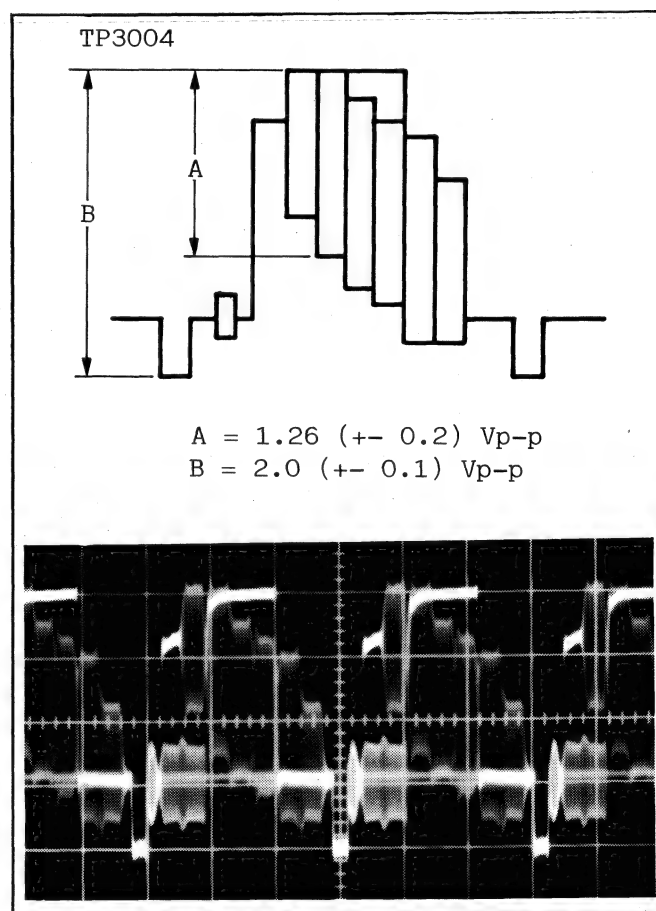


Fig. E32 TP3004 0.5V/20 u-sec. div.

2-4. SYSTEM CONTROL SECTION

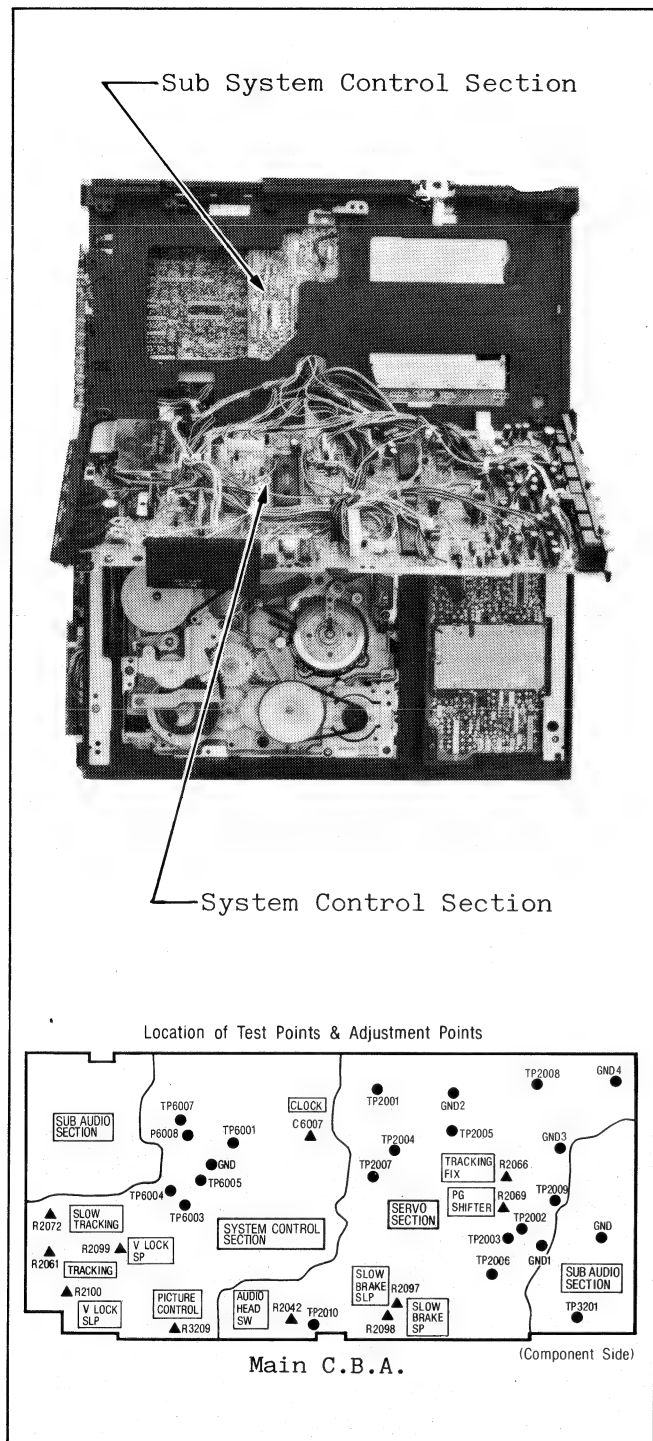


Fig. E33

2-4-1. CLOCK ADJUSTMENT

Test Point: TP6001

Adjustment: C6007 (CLOCK)

1. Connect the frequency counter with 10:1 Probe to TP6001 on the System Control Section.
2. Adjust the CLOCK (C6007) from the component side so that the frequency at TP6001 is 349.525 (+/- 0.001) KHz.
3. Remove the frequency counter.

2-5. TV DEMODULATOR SECTION

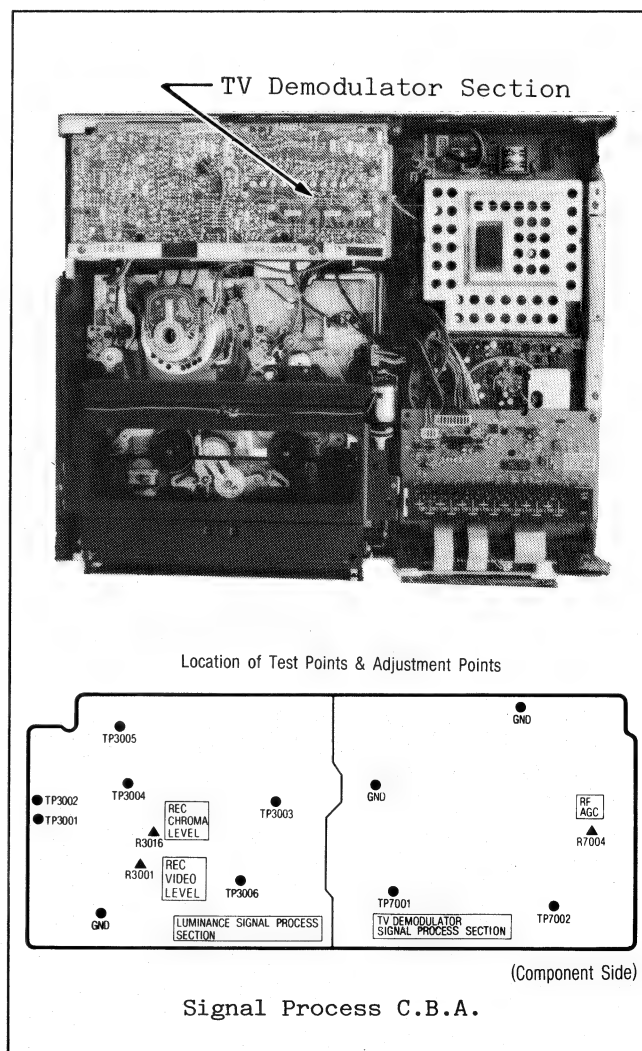


Fig. E34

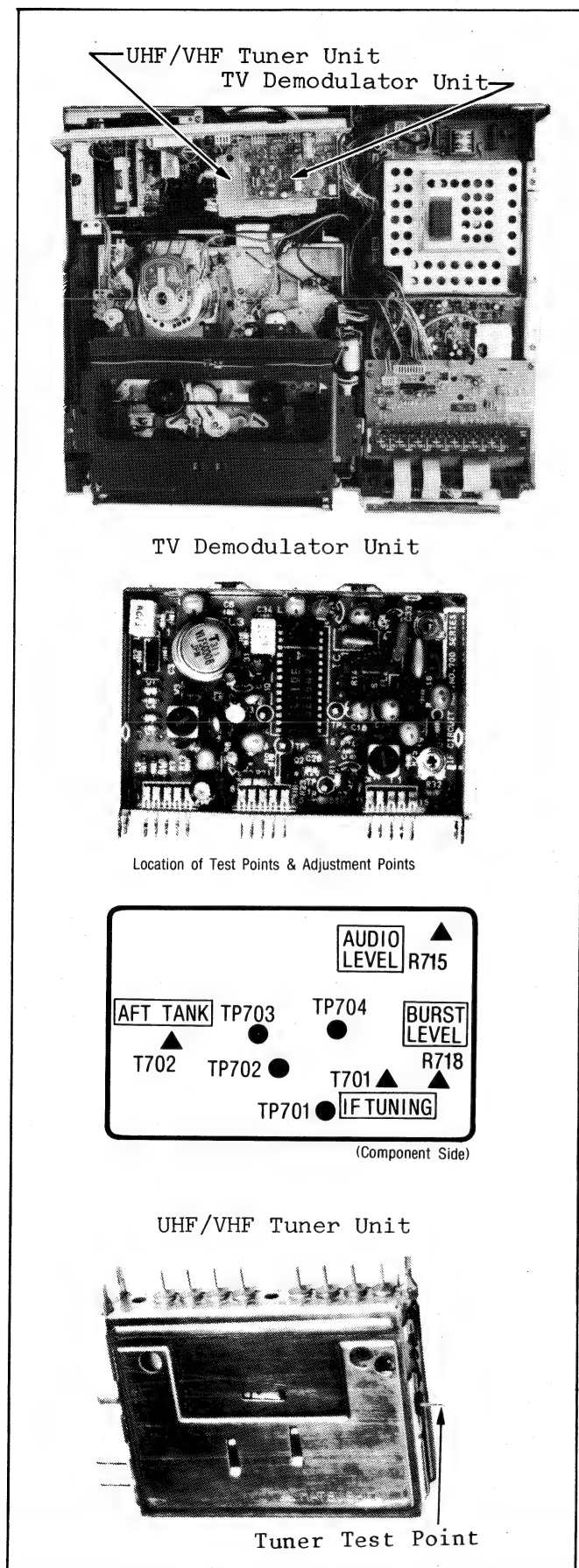


Fig. E35

2-5-1. VIF OVERALL CONFIRMATION AND VCO ADJUSTMENT

Test Points : TP703, TP704
Adjustment : T701 (VCO)

(CAUTION)

Since the TV Demodulator Unit and UHF/VHF Tuner Unit have already been factory adjusted, do not try to adjust unless absolutely necessary.

A: Factory Adjustment

A-1. Overall Confirmation of VIF

1. Connect the VIF Sweep Generator/Trap Adjuster and Monitor Scope as shown below.

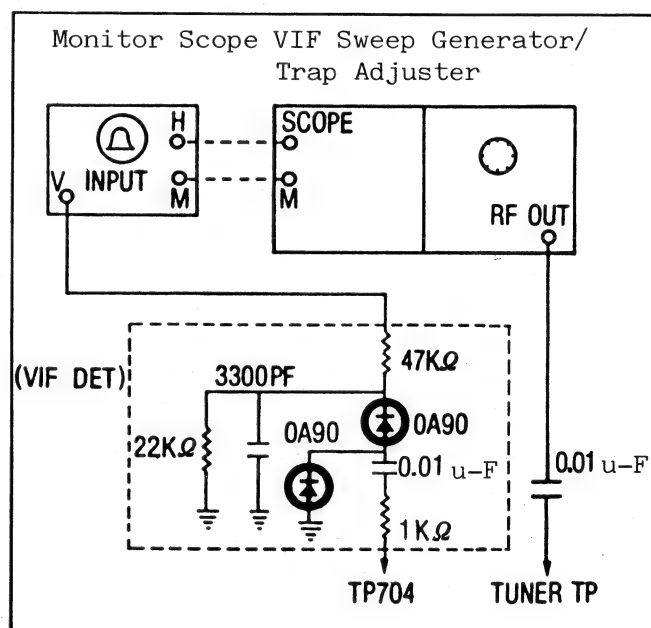


Fig. E36

2. Connect the output of the VIF Sweep Generator to tuner test point on the UHF/VHF Tuner Unit.
3. Connect the V Input of the Monitor Scope to TP704 on the TV Demodulator Unit through VIF Detector.
4. Select Channel 13.
5. Set the AFT switch to "OFF" position.
6. Connect the DC Power Supply Unit to TP701 on the TV Demodulator Unit and set at 0V DC as a starting point.
7. Connect TP702 and GND with a 3.3 u-F /25V capacitor.
8. Adjust the VCO (T701) so that the beat portion is at center as shown in Fig. E37.

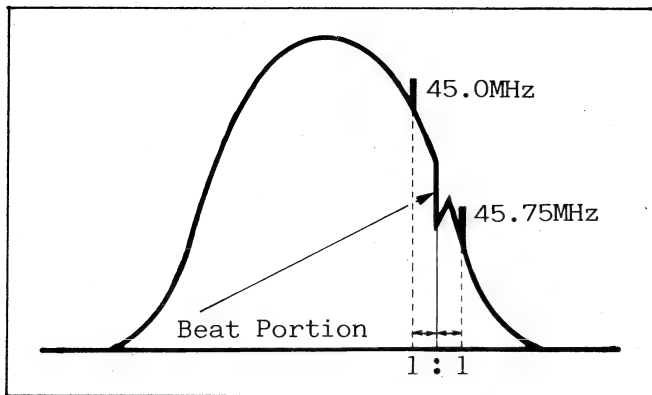


Fig. E37

9. Set the DC Power supply voltage on TP701 so that the waveform level is maximum.
10. Adjust the output of the VIF Sweep Generator so that the A level is 1.0Vp-p.

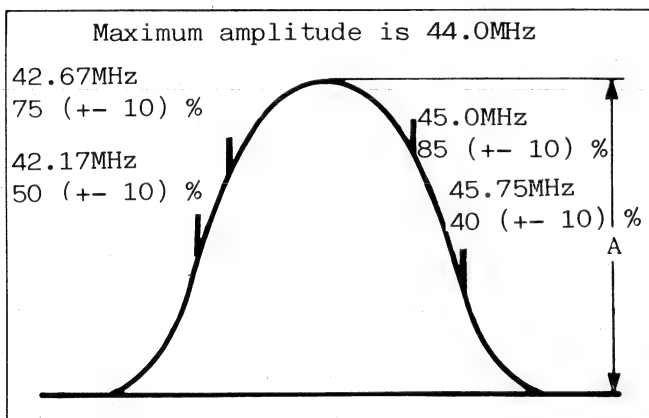


Fig. E38

11. Increase the VIF Sweep Generator output by 25dB.
12. Adjust the output of the DC Power Supply Unit so that the A portion becomes 1.0Vp-p.
13. Confirm that the Sweep output waveform is as shown in Fig. E38.
14. Adjust the VCO (T701) so that the Beat portion is at 45.75MHz marker as shown below.

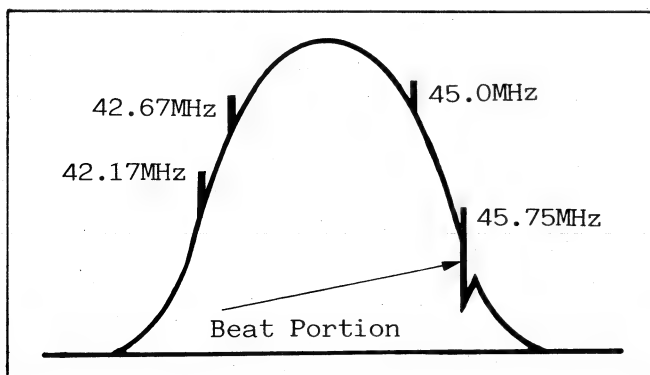


Fig. E39

15. Remove the capacitor.

A-2. VCO Adjustment

1. Adjust DC Power Supply Unit to 0V DC.
2. Connect a 3.3 u-F/25V capacitor between TP702 and GND.
3. Connect the Frequency Counter to TP703 on the TV Demodulator Unit through a Tuning Amp.

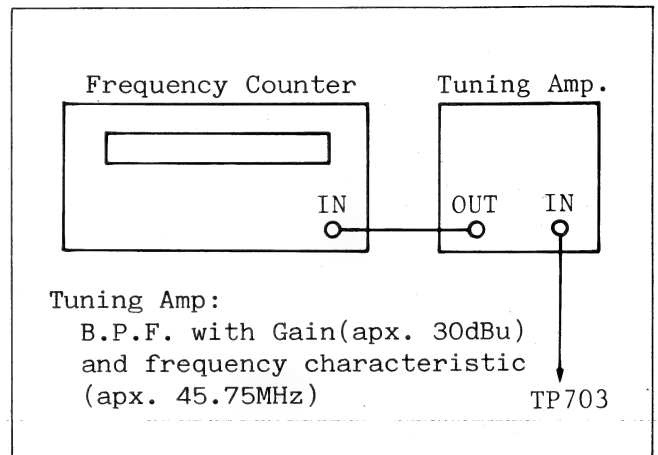


Fig. E40

4. Adjust the VCO (T701) so that the frequency is 45.75MHz (+- 0.02) MHz.
5. Remove the capacitor.

B. Field Adjustment

1. Supply the NTSC standard color bar signal to the RF Input on the rear panel and tune this signal.
2. Connect the scope to TP704 on the TV Demodulator Unit.
3. Adjust the VCO (T701) so that the waveform is as shown below.

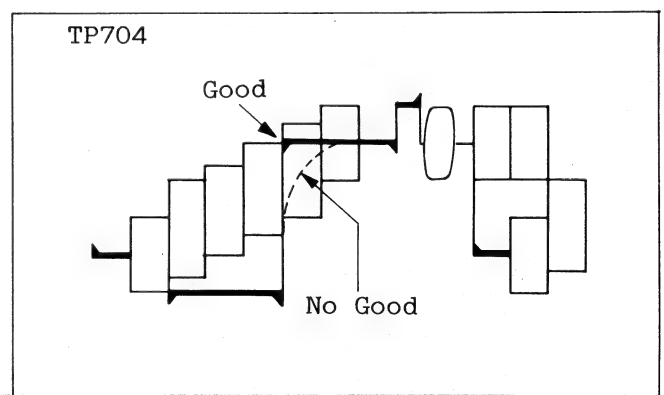


Fig. E41

2-5-2. AFT TANK ADJUSTMENT

Test Point: Tuner Test Point (TP)
Adjustment: T702 (AFT)

1. Tune in a local TV program on Channel 4.
2. Connect the frequency counter to tuner test point on the UHF/VHF Tuner Unit through a 10k Ω resistor and a 10PF capacitor.

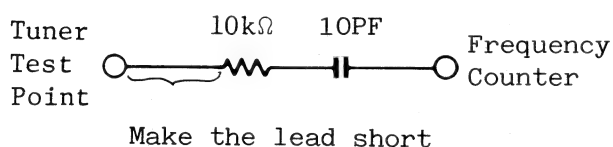


Fig. E42

3. Set the AFT switch on the Tuning Control Unit to "OFF".
4. Adjust the tuning VR on the front panel so that the frequency is 113.00 (+ 0.01) MHz.
5. Set the AFT switch on the tuning Control Unit to "ON".
6. Adjust the AFT (T702) so that the frequency is 113.00 (+ 0.005) MHz.
7. Remove the frequency counter.

2-5-3. BURST LEVEL ADJUSTMENT

Test Point : Pin 10 of TV Demodulator Unit
Adjustment : R718 (BURST LEVEL)

1. Supply the NTSC standard color bar signal to the RF Input on the rear panel and tune to this signal.
2. Connect the scope to Pin 10 of TV Demodulator Unit.
3. Confirm that the video level at Pin 10 of TV Demodulator Unit is 1.0 (+ 0.2) Vp-p.
4. Adjust the BURST LEVEL (R718) so that the burst level is 22 (+ 1) % of the video level.
5. Confirm that the sync level is more than 24% of video level.

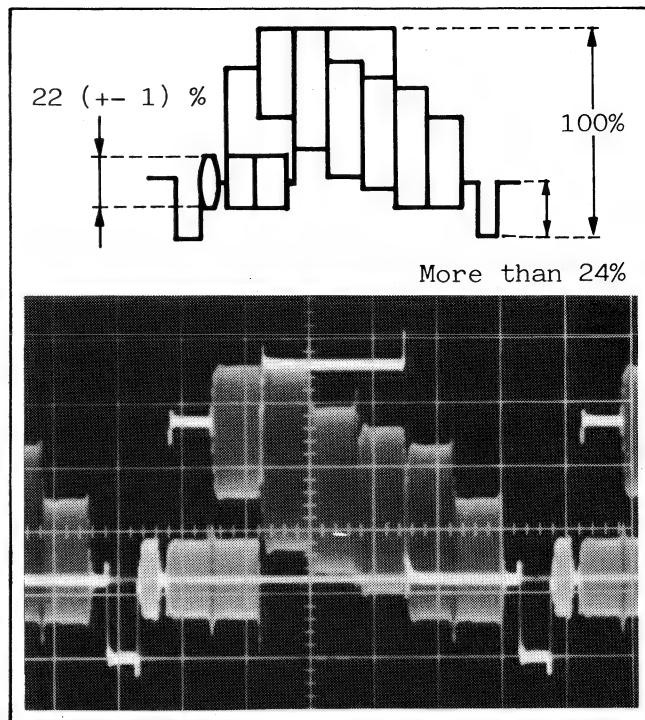


Fig. E43 Pin 10 of TV Demodulator Unit
0.2V/10 u-sec. div.

2-5-4. AUDIO LEVEL ADJUSTMENT

Test Point : Pin 15 of the
TV Demodulator Unit
Adjustment : R715 (AUDIO LEVEL)

1. Supply TV RF signal with audio modulation of 400Hz at 30% to the RF Input on the rear panel.
2. Connect the scope between Pin 15 of the TV Demodulator Unit and GND.
3. Set the AFT switch on the Tuning Control Unit to "ON".
4. Adjust the AUDIO LEVEL (R715) so that the level is 140 (+ 10)mVp-p.

2-5-5. RF AGC ADJUSTMENT

Test Point : TP7001
Adjustment : R7004 (RF AGC)

A: Factory Adjustment

1. Tune in a color bar signal (VHF).
2. Set the AFT switch on the Tuning Control meter Unit to "ON".
3. Set the input level of electric field to 63 (+ 1) dBu.
(Using the Attenuator and Spectrum Analyzer)

4. Connect the scope to TP7001 on the Demodulator Signal Process Section.
5. Turn the RF AGC (R7004) on the Demodulator Signal Process Section fully counterclockwise from foil side.
6. Then slowly turn the RF AGC (R7004) till just before the voltage drops.
7. Change the input electric field from 63 dBu to 66 dBu.
8. Confirm that the voltage at TP7001 has dropped more than 1.0V.

B. Field Adjustment

1. Supply a local TV Signal to the RF Input on the rear panel and tune to this signal.
2. Set the AFT switch on the Tuning Control Unit to "ON".
3. Connect the scope to pin 10 of TV Demodulator Unit and GND.
4. Adjust the RF AGC (R7004) so that the H-sync is Maximum and its shape can be observed clearly.

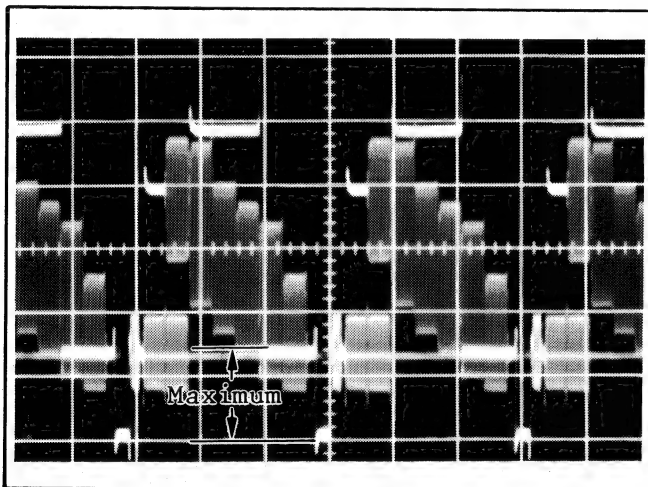


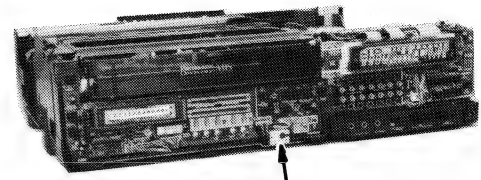
Fig. E44 Pin 10 of TV Demodulator Unit
0.2V/20 u-sec. div.

5. Confirm that the noise band and beat do not appear on the TV screen.

Note :

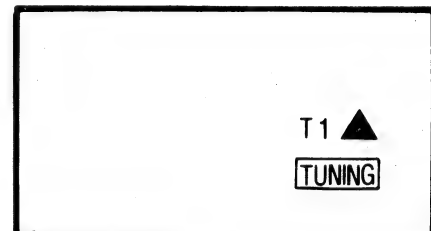
This procedure is just a simplified method. So use the factory Adjustment for a more accurate or interchangeable adjustment.

2-6. IR WIRELESS RECEIVING DETECTOR SECTION



IR Wireless Receiving
Detector Unit

Location of Test Points & Adjustment Points



(Component Side)

IR Wireless Receiving Detector Unit

Fig. E45

2-6-1. TUNING ADJUSTMENT

Test Point : Pin 1 of P6026

Adjustment : T1 (TUNING)

1. First, place the deck so that the left side faces down. Hold the deck with your hand and then remove 2 red screws (A) and 2 screws (B), and remove the Front Frame Support Angle from the unit.

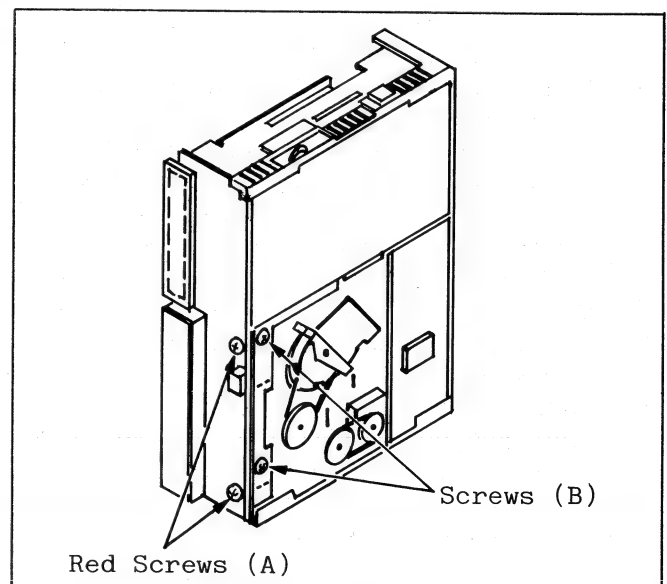


Fig. E46

2. Place the deck in the normal operating position. And then take out the IR Wireless Receiving Detector Unit from the Unit.
3. Place the IR Wireless Transmitter Unit and the Unit as shown below.

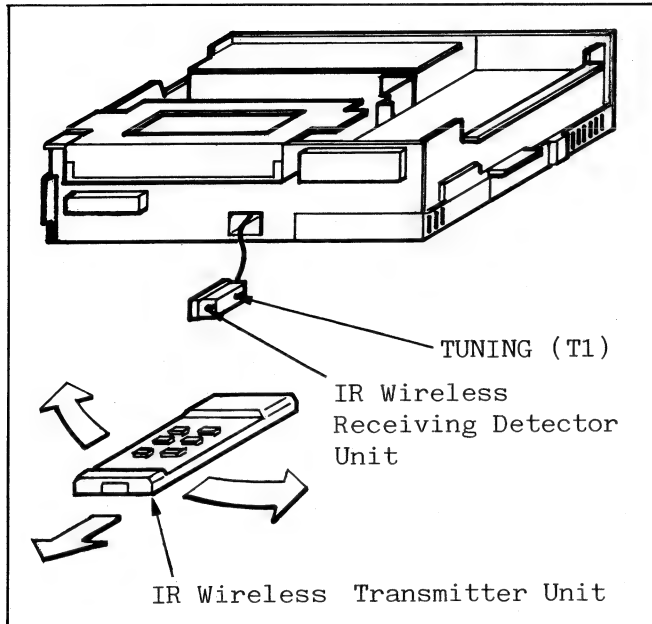


Fig. E47

4. Place the Unit in the stop mode.
5. Connect the scope to Pin 1 of P6026 on the Sub System Control Section.
6. Change the direction of the IR Wireless Transmitter Unit gradually with pushing the stop button on the IR Wireless Transmitter Unit until the waveform on the scope is just begins to be disturbed as shown below.

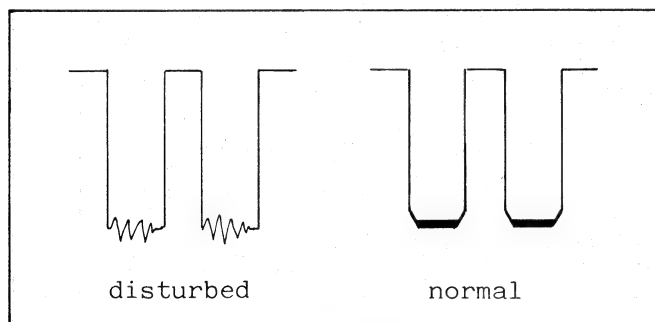
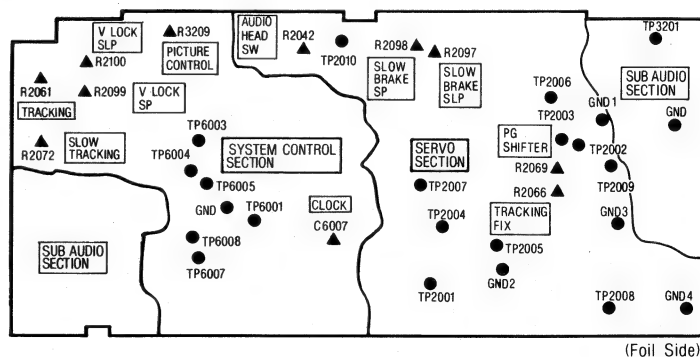
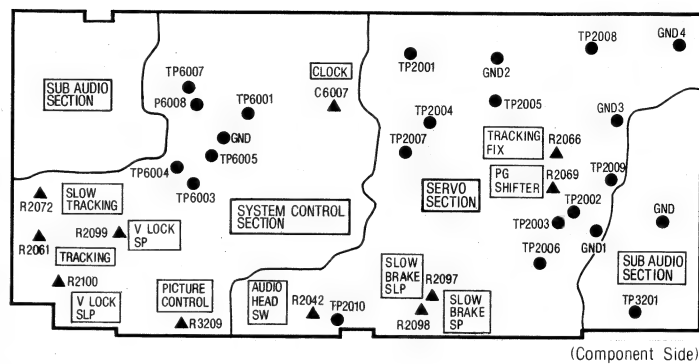
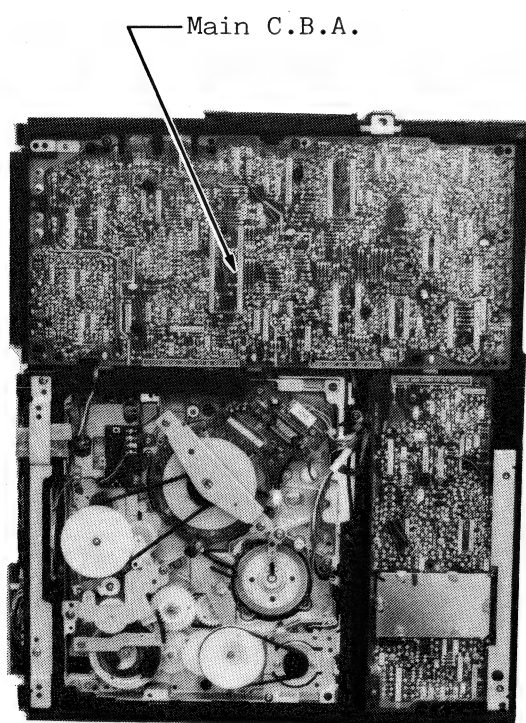


Fig. E48

7. Adjust the TUNING (T1) on the IR Wireless Receiving Detector Unit continuing the condition of item 6 so that the waveform at Pin 1 of P6026 is best (i.e. least disturbance possible).
8. Return the IR Wireless Receiving Detector Unit to the Unit.
9. Remove the scope.

MAIN C.B.A.

(VEPS0251B1)



(VEPS0422B1)

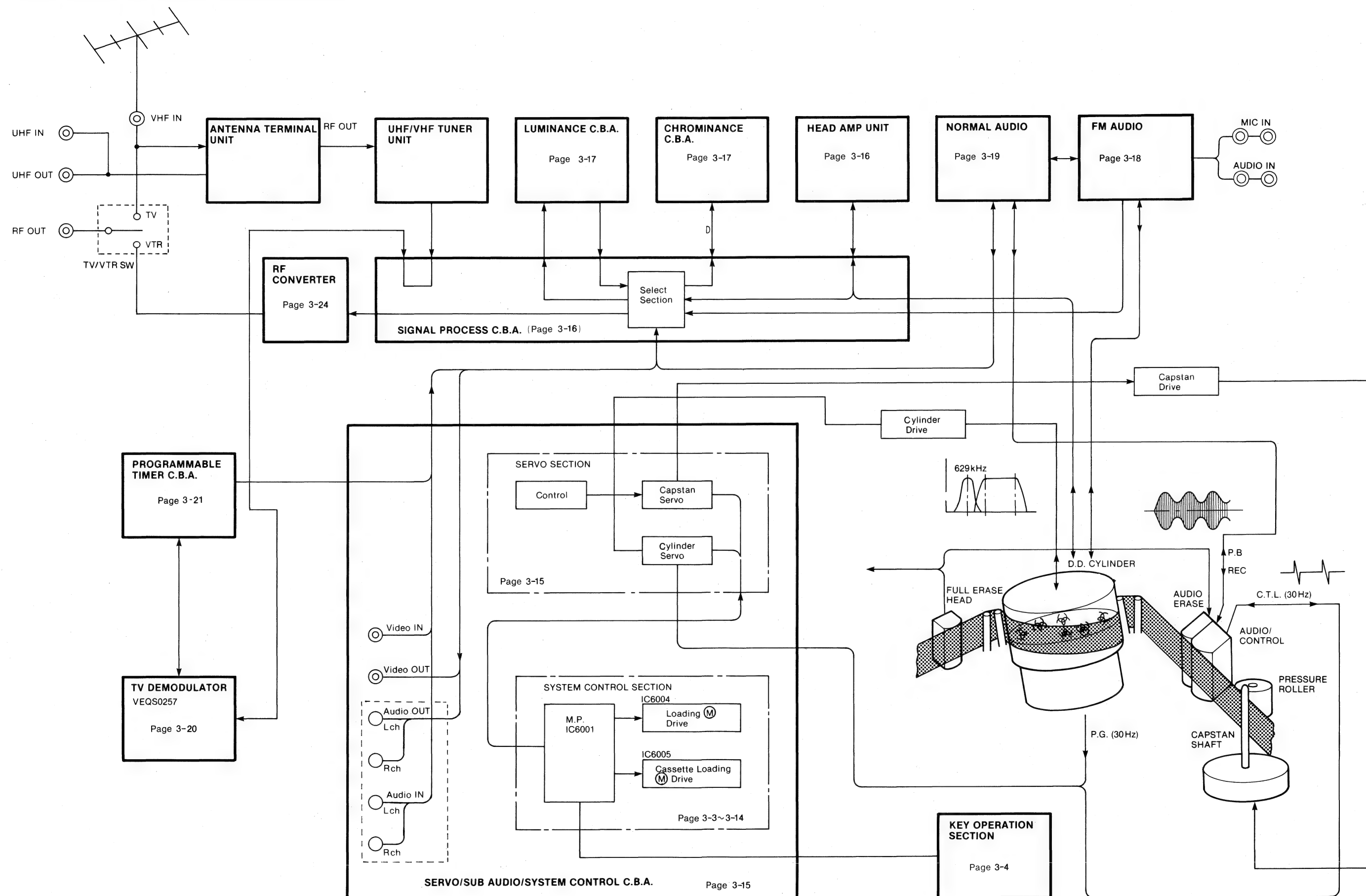
	FM Audio C.B.A. (VEPS0424B1)	Normal Audio C.B.A. (VEPS0422B1)	Signal Process C.B.A. (VEPS0344E1)
<div>06</div> <div>TP8103</div> <div>Component Side)</div>	<div>FM Audio C.B.A.</div> <div></div>	<div></div> <div>Normal Audio C.B.A.</div>	<div>Signal Process C.B.A.</div> <div></div> <div></div>
<div>TP3103</div> <div>Component Side)</div>	<div></div> <div>(Foil Side)</div>	<div></div> <div>(Foil Side)</div>	<div>UHF/VHF Tuner Unit (TNV56751F2R)</div> <div>TV Demodulator Unit (VEQS0257)</div>
<div>3502</div> <div>03</div> <div>(Component Side)</div>		<div><div>UHF/VHF Tuner Unit</div><div>TV Demodulator Unit</div><div></div><div>UHF/VHF Tuner Unit</div><div>TV Demodulator Unit</div><div></div><div>TV Demodulator Unit</div><div></div><div>(Component Side)</div></div> <div><div>Tuner Test Point</div></div>	

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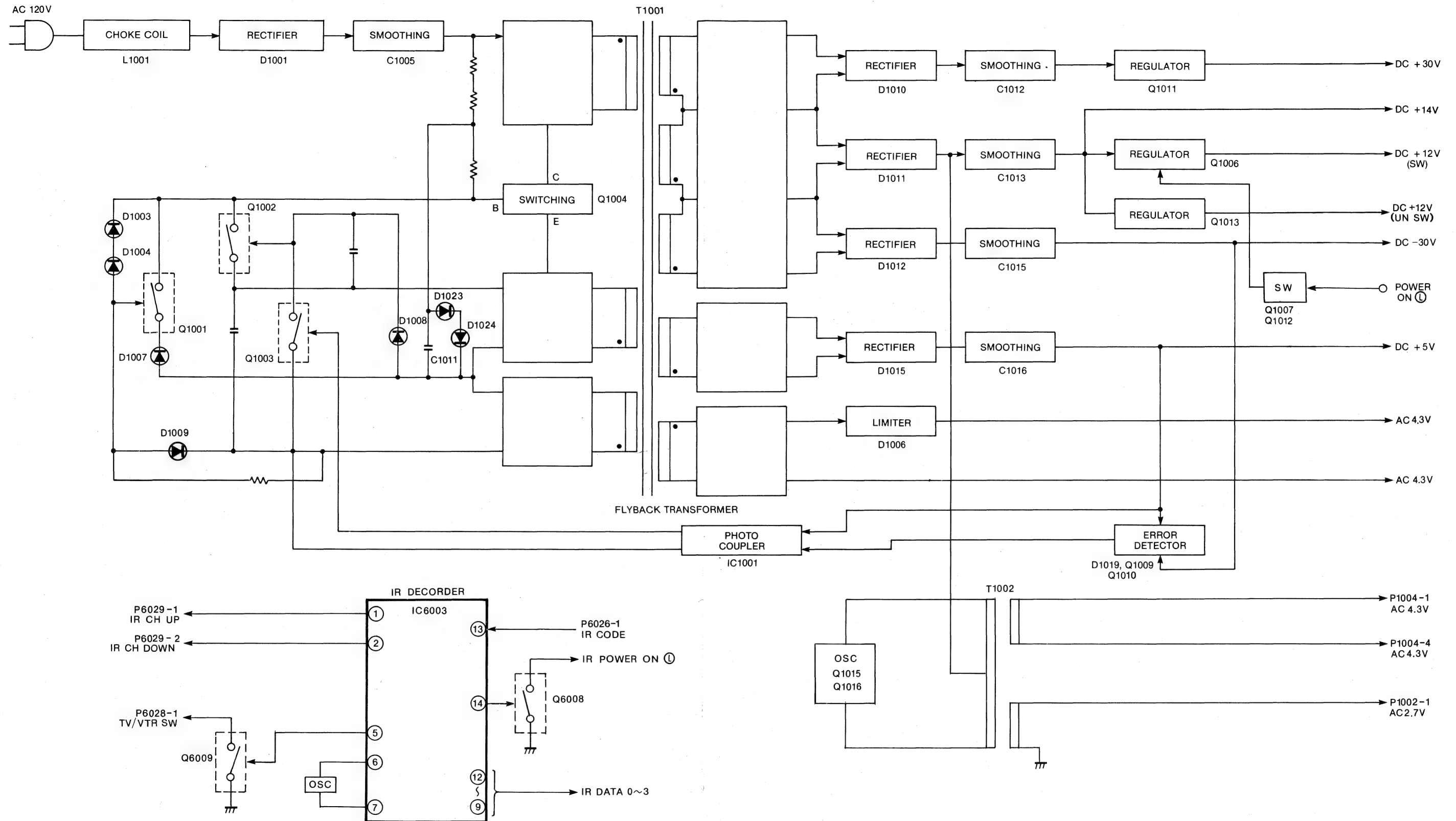
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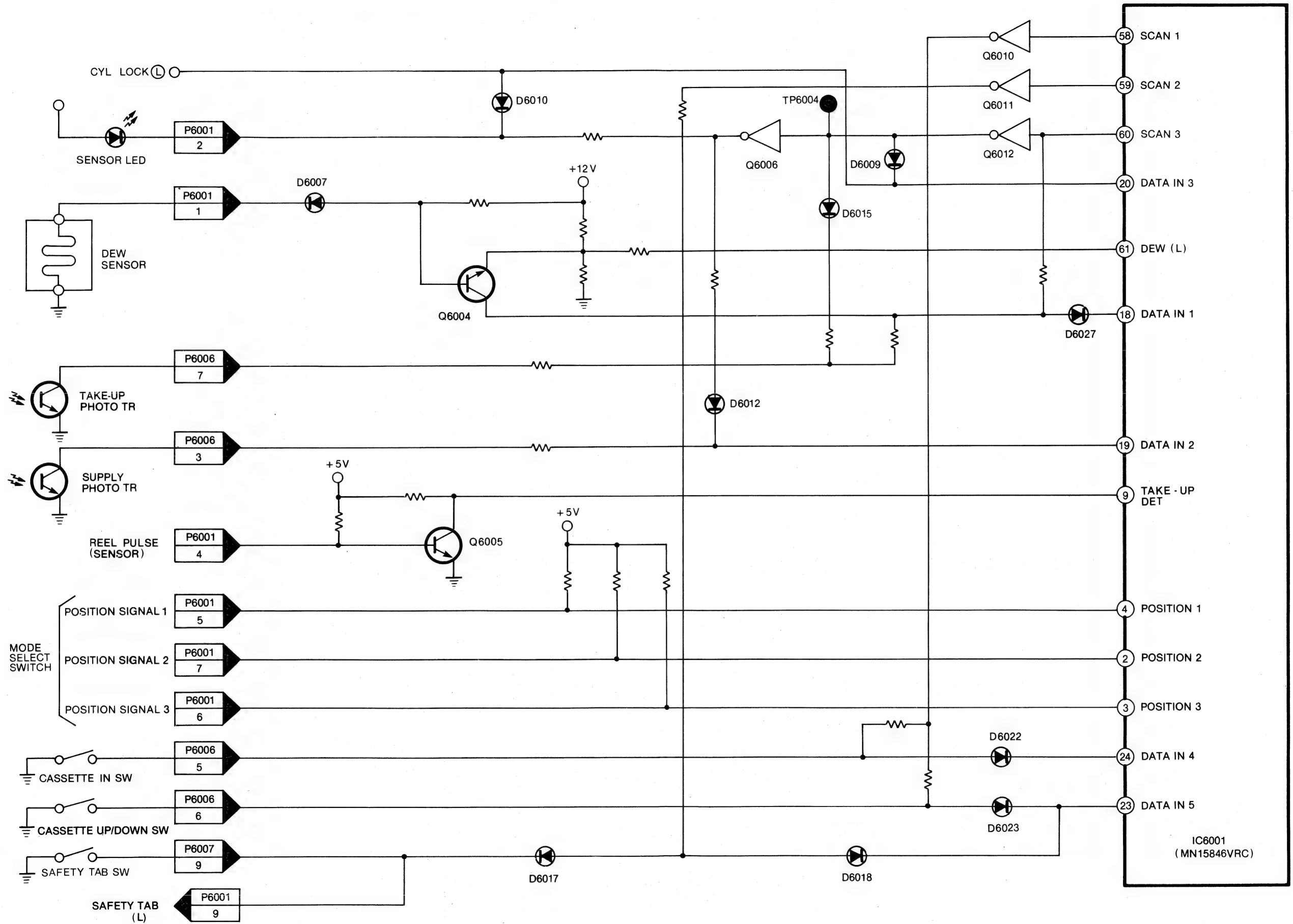
OVERALL BLOCK DIAGRAM



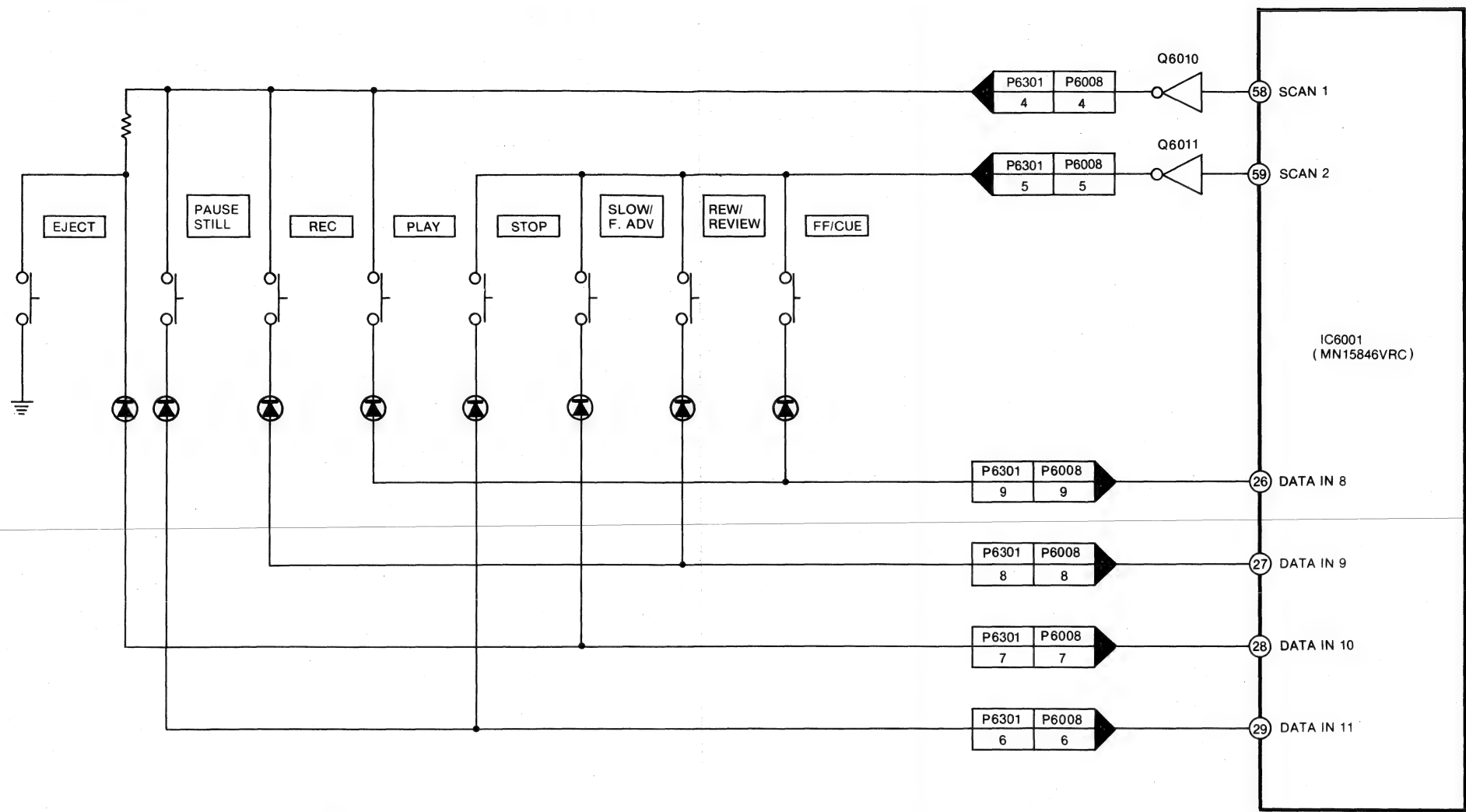
POWER SUPPLY BLOCK DIAGRAM



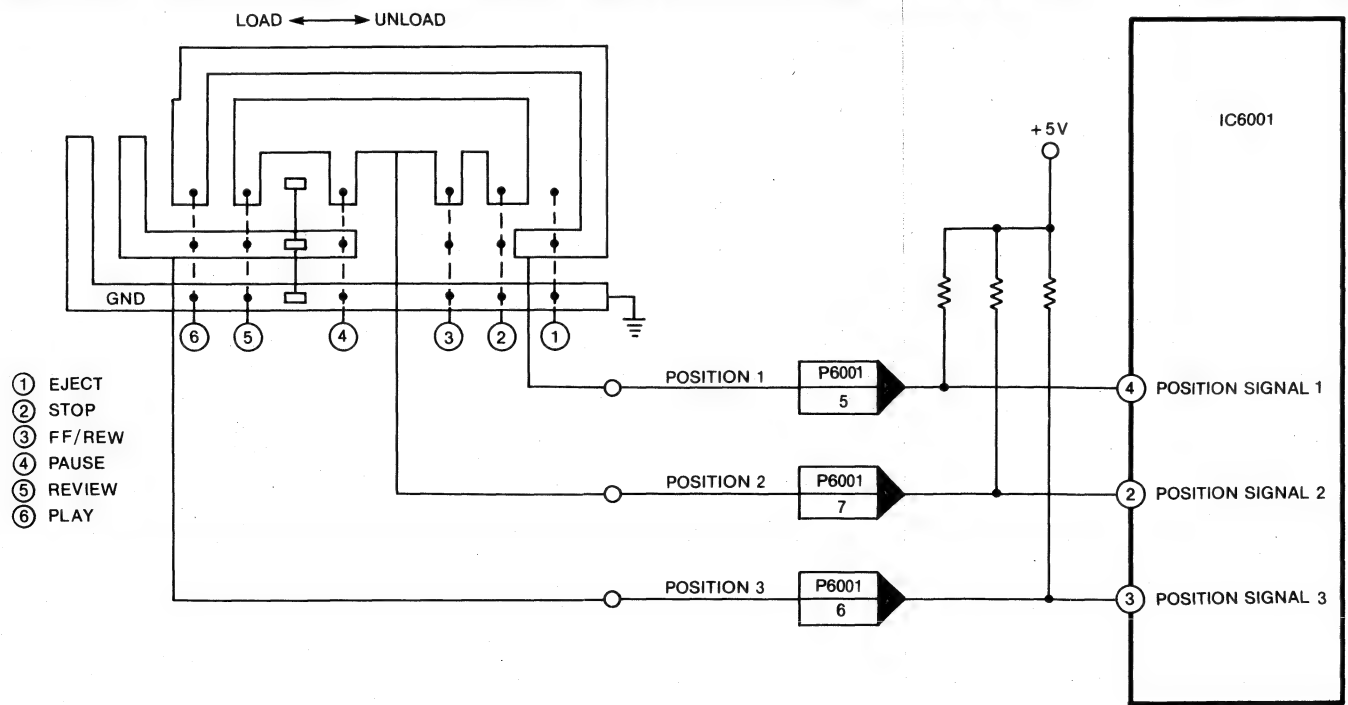
SAFETY DEVICE BLOCK DIAGRAM (SYSTEM CONTROL)



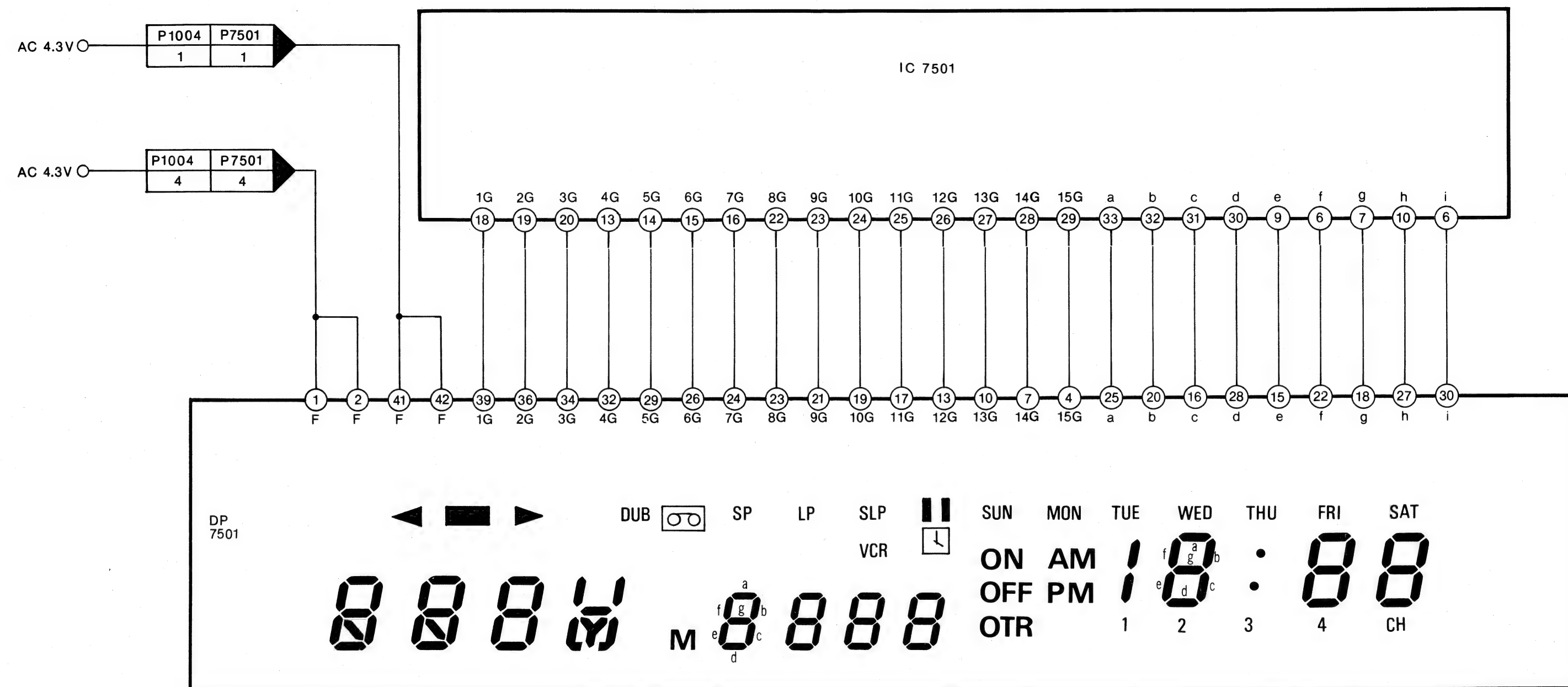
KEY MATRIX BLOCK DIAGRAM (SYSTEM CONTROL)



MODE SELECT SWITCH BLOCK DIAGRAM (SYSTEM CONTROL)



FIP DRIVE BLOCK DIAGRAM (SYSTEM CONTROL)



SERIAL DATA TRANSMISSION (SYSTEM CONTROL)

1. Data Transmission 1 (Operational Information)

DATA NO.	OPERATION
(1)	"0" } TRANSMISSION CODE
(2)	
(3)	E-E ("0")/V-V ("1")
(4)	PAUSE/FLASH ("1")
(5)	} OPERATION INFORMATION CODE
(6)	
(7)	
(8)	

Data Transmission of Operational Information

2. Data Transmission 2 (Counter Number Information)

DATA NO.	OPERATION
(1)	"1" } TRANSMISSION CODE
(2)	MEMORY ON ("1")/OFF ("0")
(3)	} COUNTER BLOCK NO.
(4)	
(5)	} COUNTER NUMBER INFORMATION
(6)	
(7)	
(8)	

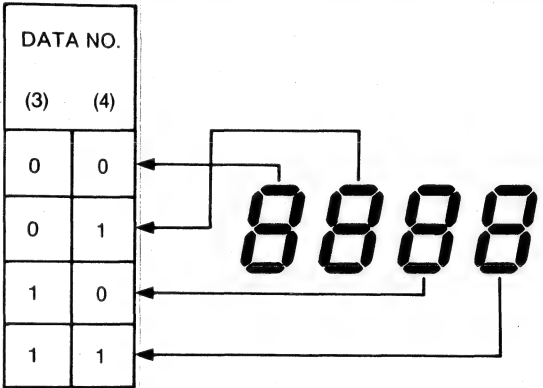
Data Transmission of Counter Number Information

DATA NO. (5) (6) (7) (8)	INFORMATION	DATA NO. (5) (6) (7) (8)	INFORMATION
0 0 0 0	0	0 1 0 1	5
0 0 0 1	1	0 1 1 0	6
0 0 1 0	2	0 1 1 1	7
0 0 1 1	3	1 0 0 0	8
0 1 0 0	4	1 0 0 1	9

Data Transmission 2 (Counter Number Information)

DATA NO. (5) (6) (7) (8)	INFORMATION	DATA NO. (5) (6) (7) (8)	INFORMATION
0 0 0 0	UNDER CUT	1 0 0 0	FF
0 0 0 1	A. DUB	1 0 0 1	REW
0 0 1 0	F. ADV	1 0 1 0	DEW
0 0 1 1	REVIEW	1 0 1 1	STOP
0 1 0 0	CUE	1 1 0 0	EJECT
0 1 0 1	PLAY	1 1 0 1	STOP
0 1 1 0	SLOW	1 1 1 0	ALL OFF
0 1 1 1	REC	1 1 1 1	POWER OFF

Data Transmission 1 (Operational Information)



Counter Position Code

3. Data Transmission 3 (Tape Speed Information)

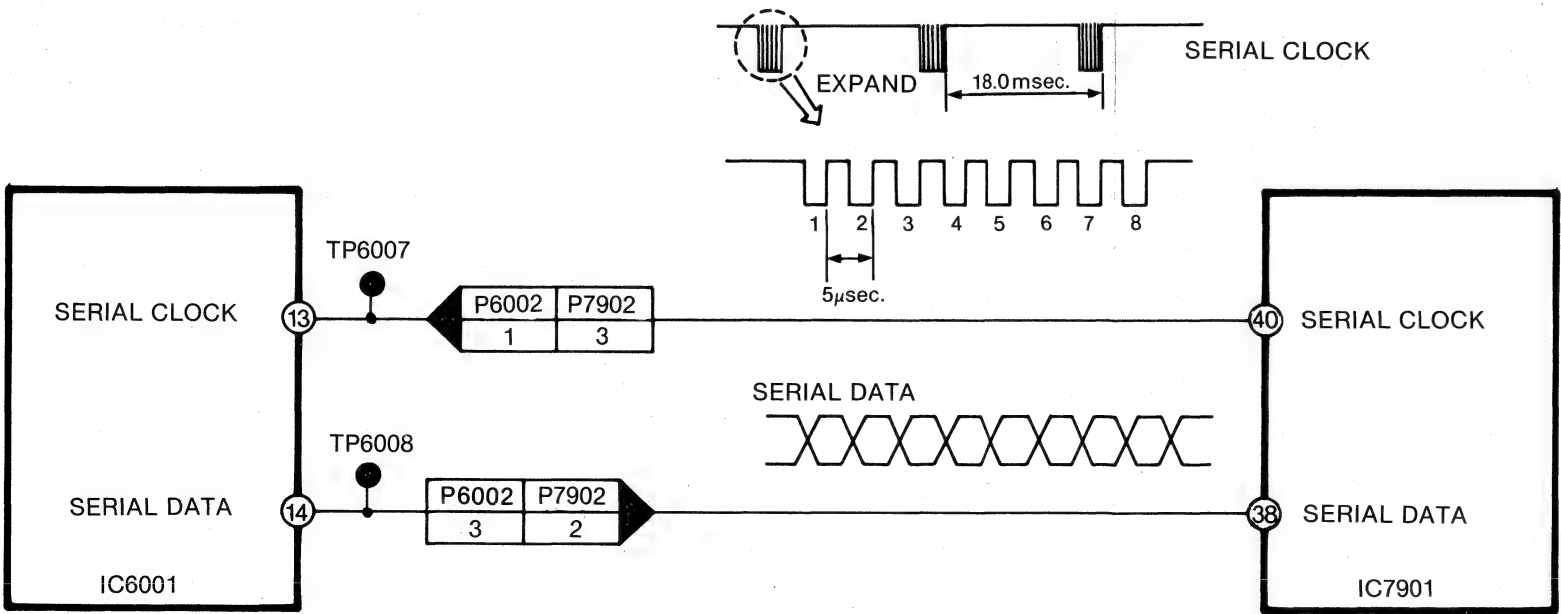
DATA NO.	OPERATION
(1)	"1" } TRANSMISSION CODE
(2)	
(3)	"0"
(4)	MEMORY ("1")/ERASE ("0")
(5)	} TAPE SPEED DATA INFORMATION CODE
(6)	
(7)	
(8)	

Data Transmission of Tape Speed Data Information

DATA NO. (5) (6) (7) (8)	INFORMATION
1 1 0 0	SP
1 1 0 1	LP
1 1 1 0	SLP

Data Transmission 3 (Tape Speed Information)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	DATA NO.
0	0	1	0	1	0	1	0	8 bit Data
DISCRIMINATION CODE				INFORMATION CODE				
8 bit Information Data								



MICROPROCESSOR (IC6001: MN15846VRC) I/O CHART

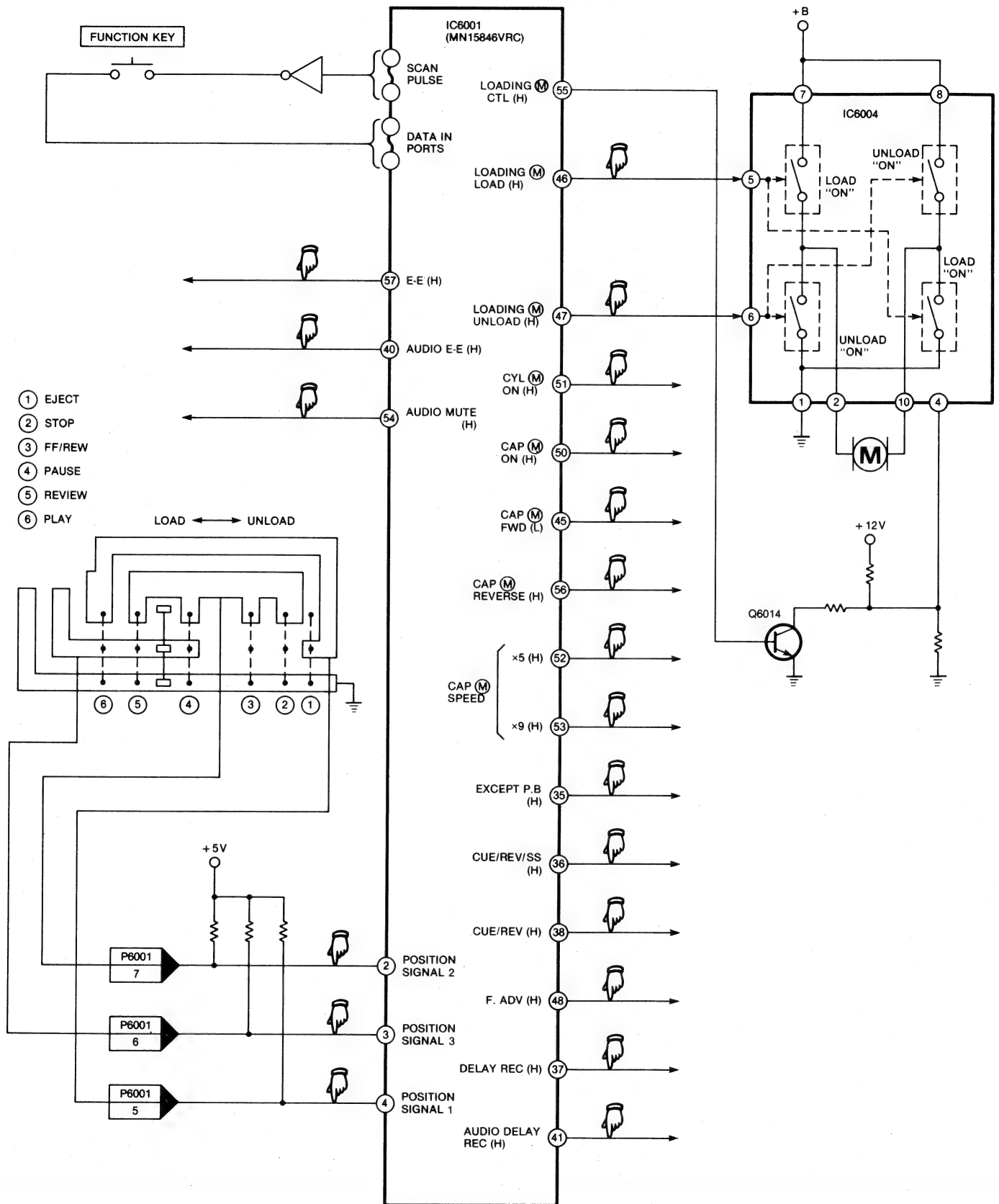
PIN	I/O	NAME/OPERATION		
1	—	GND		
2	I	POSITION SIGNAL 2		
3	I	POSITION SIGNAL 3		
4	I	POSITION SIGNAL 1		
5	—	GND		
6	I	TIMER SET (H)		
7	I	TIMER REC (H)		
8	I	GND		
9	I	REEL SENSOR		
10	I	CLOCK (349kHz)		
11	I	SIRQ		
12	I	IRQ		
13	I	SERIAL CLOCK		
14	O	SERIAL DATA		
15	I	SBI		
16	I	RESET (L)		
17	I	V REF (1)		
18	I	DATA IN 1	(H)/(L)	OPERATION
19	I		(H)	TAKE UP PHOTO TR
			(M)	DEW SENSOR
		DATA IN 2	(H)/(L)	OPERATION
			(H)	SUPPLY PHOTO TR
20	I	DATA IN 3	(H)/(L)	OPERATION
			(L)	CYL LOCK
21	I	V REF		
22	—	GND		
23	I	DATA IN 5	(H)/(L)	OPERATION
			(H)	SAFETY TAB SW
24	I	DATA IN 6	(M)	CASSETTE UP/DOWN SW
			(H)/(L)	OPERATION
			(H)	SLP
25	I	DATA IN 7	(L)	CASSETTE IN SW
			(H)/(L)	OPERATION
26	I	DATA IN 8	(H)	LP/SLP
			SCAN PULSE	OPERATION
			SCAN 1	PLAY KEY
27	I	DATA IN 9	SCAN 2	FF KEY
			SCAN PULSE	OPERATION
28	I	DATA IN 10	SCAN 1	REC KEY
			SCAN 2	REW KEY
			SCAN PULSE	OPERATION
			SCAN 1	EJECT KEY
			SCAN 2	SLOW KEY

PIN	I/O	NAME/OPERATION		
29	I	DATA IN 11	SCAN PULSE	OPERATION
			SCAN 1 SCAN 2	PAUSE KEY STOP KEY
30	I	IR REMOTE CONTROLLER DATA (1)		
31	I	IR REMOTE CONTROLLER DATA (2)		
32	I	IR REMOTE CONTROLLER DATA (3)		
33	I	IR REMOTE CONTROLLER DATA (4)		
34	O	POWER ON (L)		
35	O	EXCEPT PLAY (H)		
36	O	CUE/REVIEW/SLOW/STILL (H)		
37	O	DELAY REC (H)		
38	O	CUE/REVIEW (H)		
39	O	LP CUE/REV (L)		
40	O	AUDIO EE (H)		
41	O	AUDIO DELAY REC (H)		
42	O	CASSETTE LOADING MOTOR LOAD (H)		
43	O	CASSETTE LOADING MOTOR UNLOAD (H)		
44	O	SP MEMORY (H)		
45	O	CAP MOTOR FORWARD (L)		
46	O	LOADING MOTOR LOAD (H)		
47	O	LOADING MOTOR UNLOAD (H)		
48	O	F. ADV (H)		
49	O	SPEED MEMORY (L)		
50	O	CAP MOTOR ON (H)		
51	O	CYL MOTOR ON (H)		
52	O	CAP SPEED DATA X5 (H)		
53	O	CAP SPEED DATA X9 (H)		
54	O	AUDIO MUTE (H)		
55	O	LOADING MOTOR SPEED CONTROL		
56	O	CAP REVERSE (H)		
57	O	EE (H)		
58	O	SCAN 1		
59	O	SCAN 2		
60	O	SCAN 3/SENSOR LED		
61	I	DEW (L)		
62	I	OSC 1		
63	I	OSC 2		
64	I	VDD		

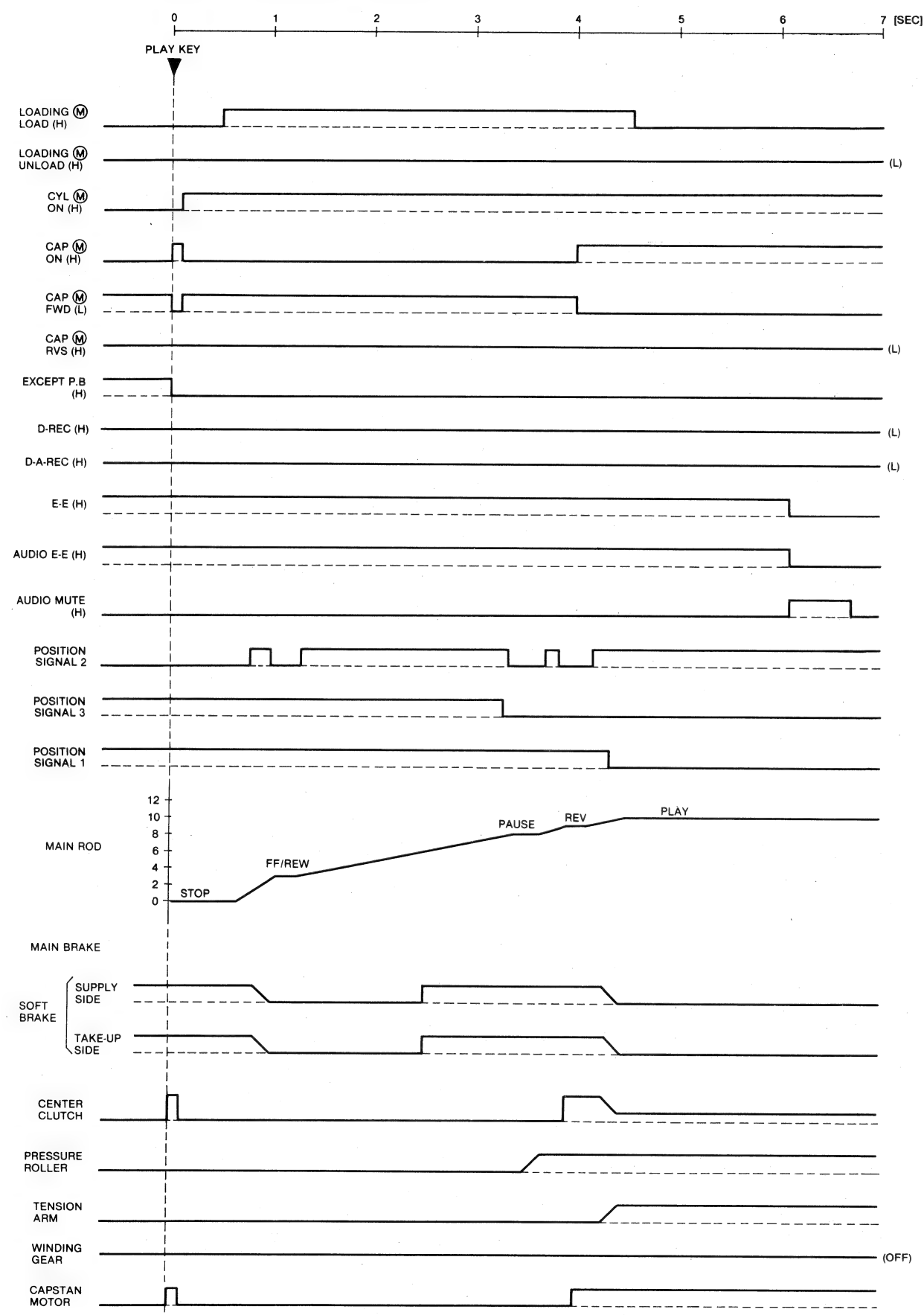
IC7501 (UPD7538C-02) I/O CHART

PIN	I/O	NAME/OPERATION		
1	I	RESET		
2	I	OSC 1		
3	I	OSC 2		
4	I	V PRE		
5	I	V LOAD		
6	O	SEGMENT i		
7	O	SEGMENT g		
8	O	SEGMENT f		
9	O	SEGMENT e		
10	O	SEGMENT h		
11	O	TIME REC (H)		
12	O	TIMER SET (H)		
13	O	GRID 4G		
14	O	GRID 5G		
15	O	GRID 6G		
16	O	GRID 7G		
17	I	DATA IN	GRID SIGNAL	OPERATION
			GRID 1G	TV/VCR SW
			GRID 2G	TIMER SET KEY
			GRID 6G	TIMER SELECT KEY
			GRID 7G	SAFETY TAB SW
			GRID 9G	CH DOWN
			GRID 10G	TIMER MODE KEY
			GRID 11G	OTR KEY
			GRID 13G	CH UP
			GRID 14G	RETURN KEY
			GRID 15G	TIMER ON/OFF KEY
18	O	GRID 1G		
19	O	GRID 2G		
20	O	GRID 3G		
21	I	VDD		
22	O	GRID 8G		
23	O	GRID 9G		
24	O	GRID 10G		
25	O	GRID 11G		
26	O	GRID 12G		
27	O	GRID 13G		
28	O	GRID 14G		
29	O	GRID 15G		
30	O	SEGMENT d		
31	O	SEGMENT c		
32	O	SEGMENT b		
33	O	SEGMENT a		
34	O	TV/VCR		
35	O	CH DOWN		
36	O	CH UP		
37	O	CH LOCK (L)		
38	I	SERIAL DATA		
39	—	NOT USED		
40	O	SERIAL CLOCK		
41	I	349kHz		
42	—	GND		

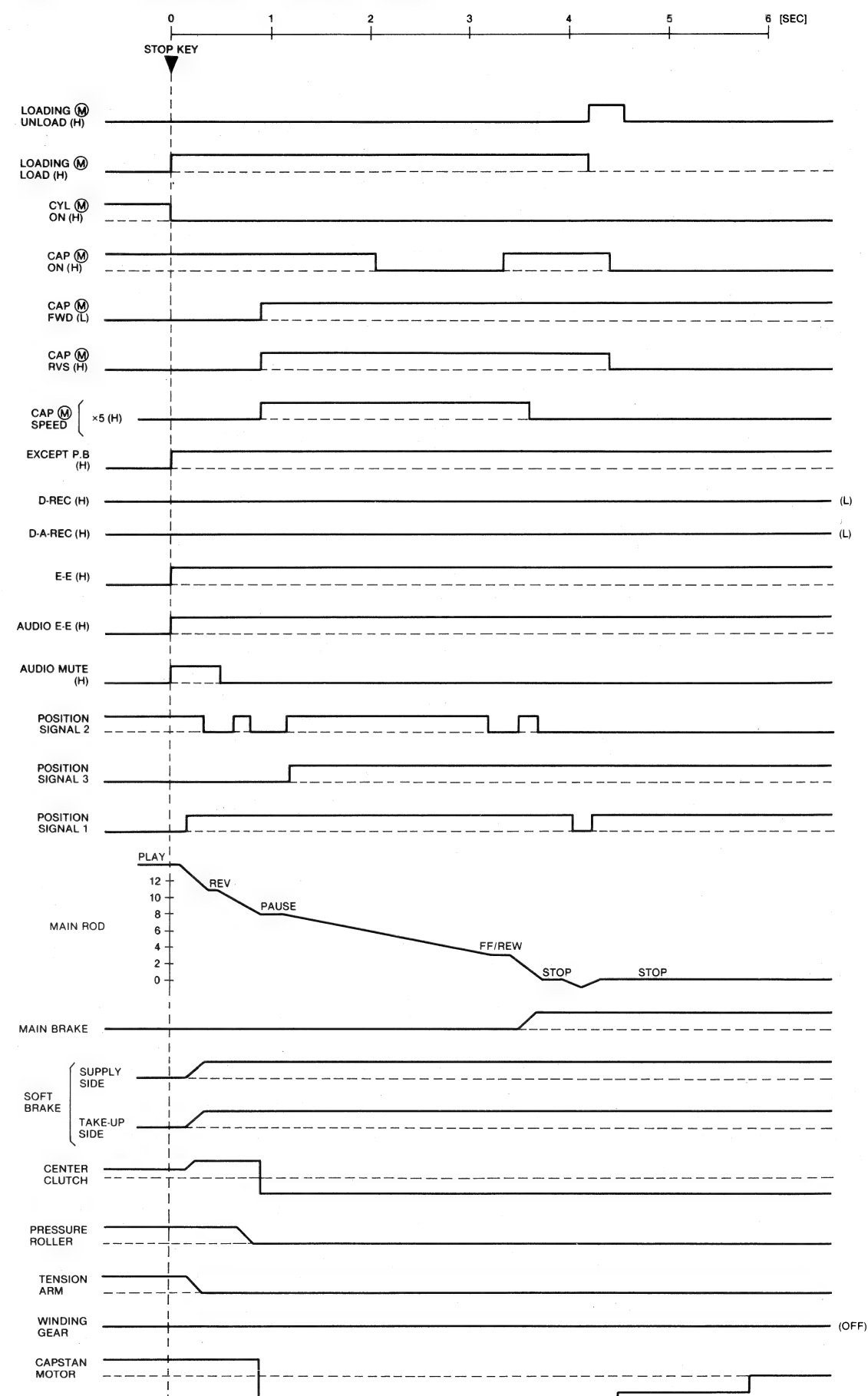
MODE BY MODE BLOCK DIAGRAM (SYSTEM CONTROL)



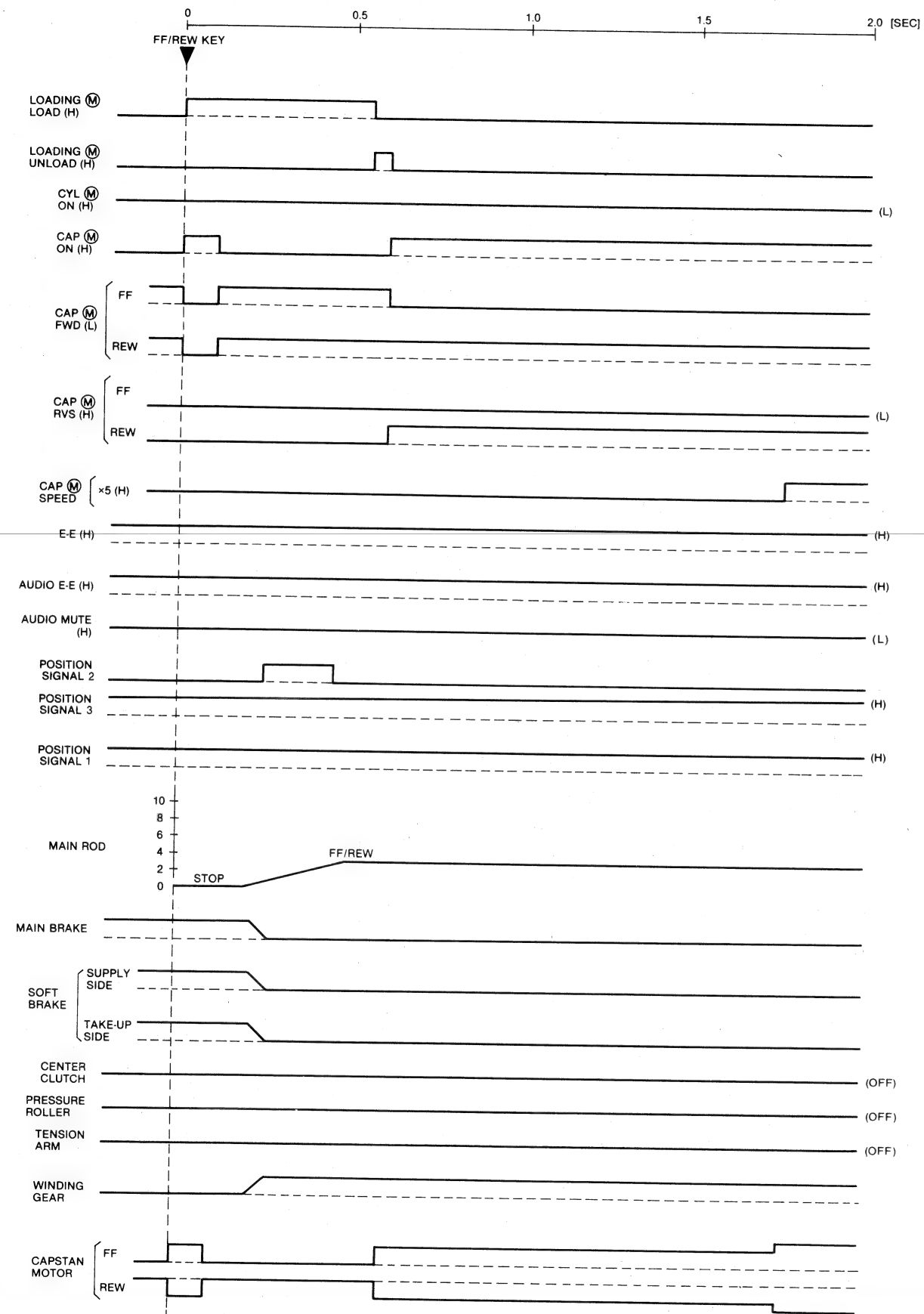
STOP → PLAY MODE TIMING CHART



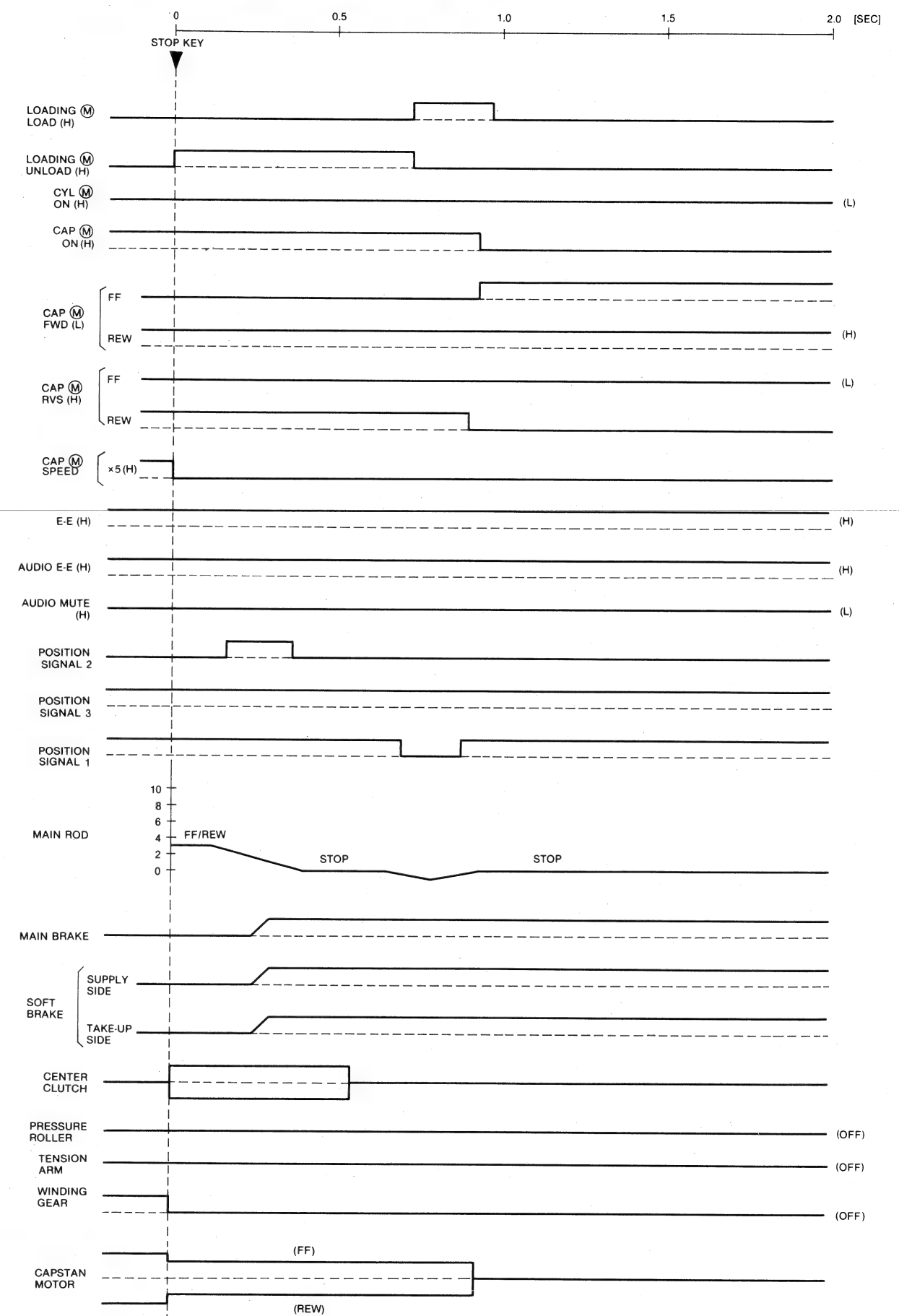
PLAY → STOP MODE TIMING CHART



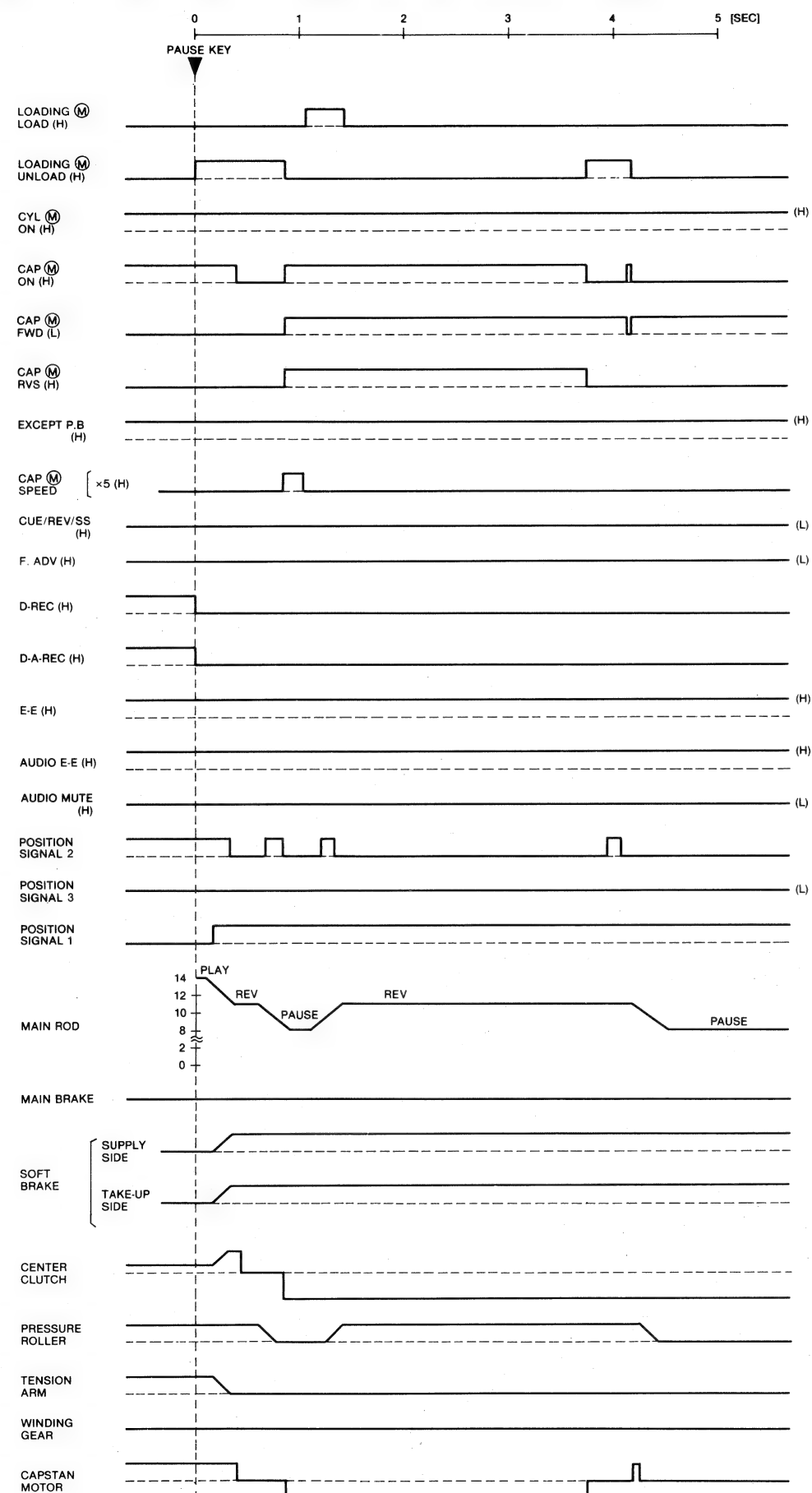
STOP → FF/REW MODE TIMING CHART



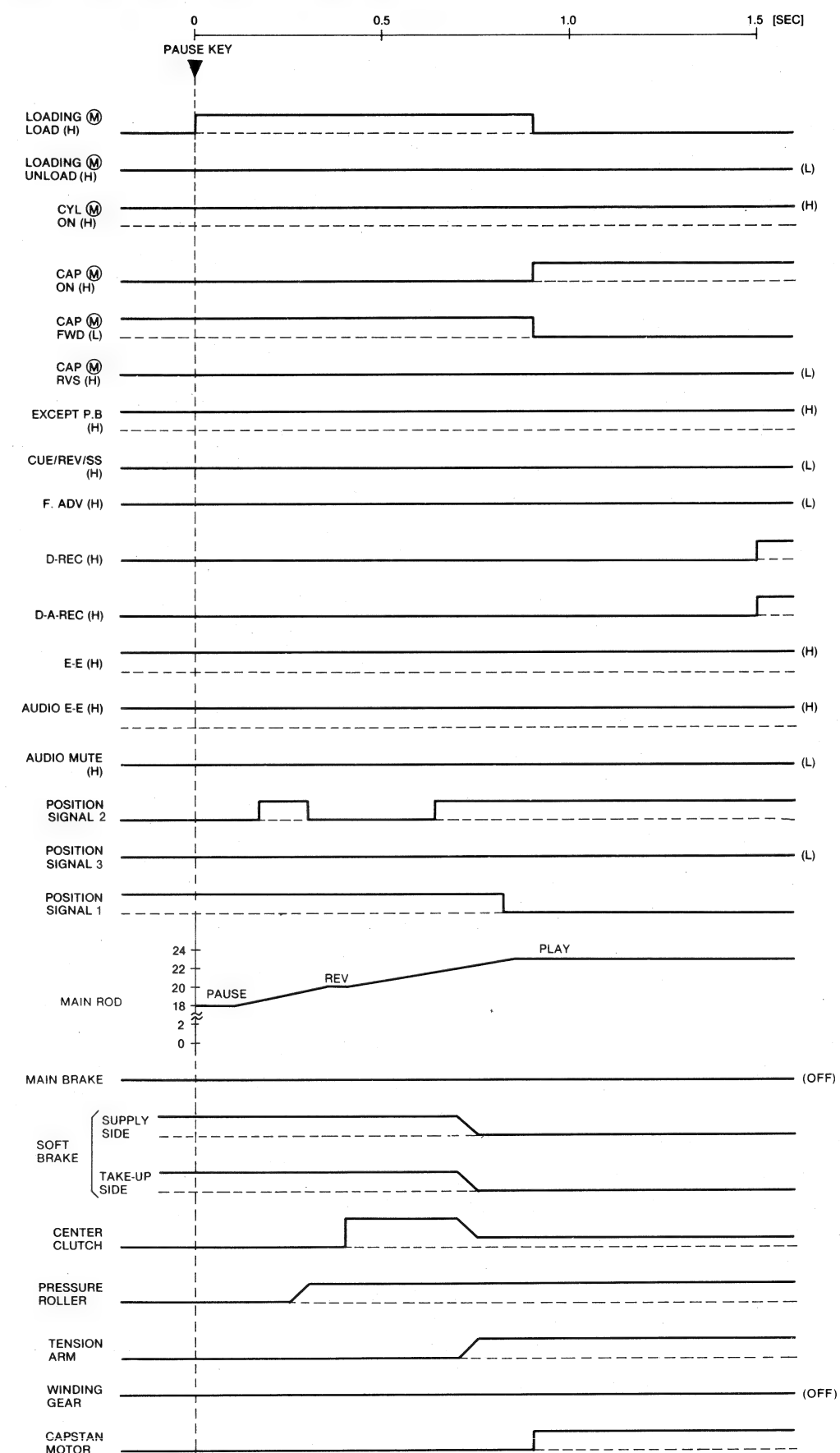
FF/REW → STOP MODE TIMING CHART



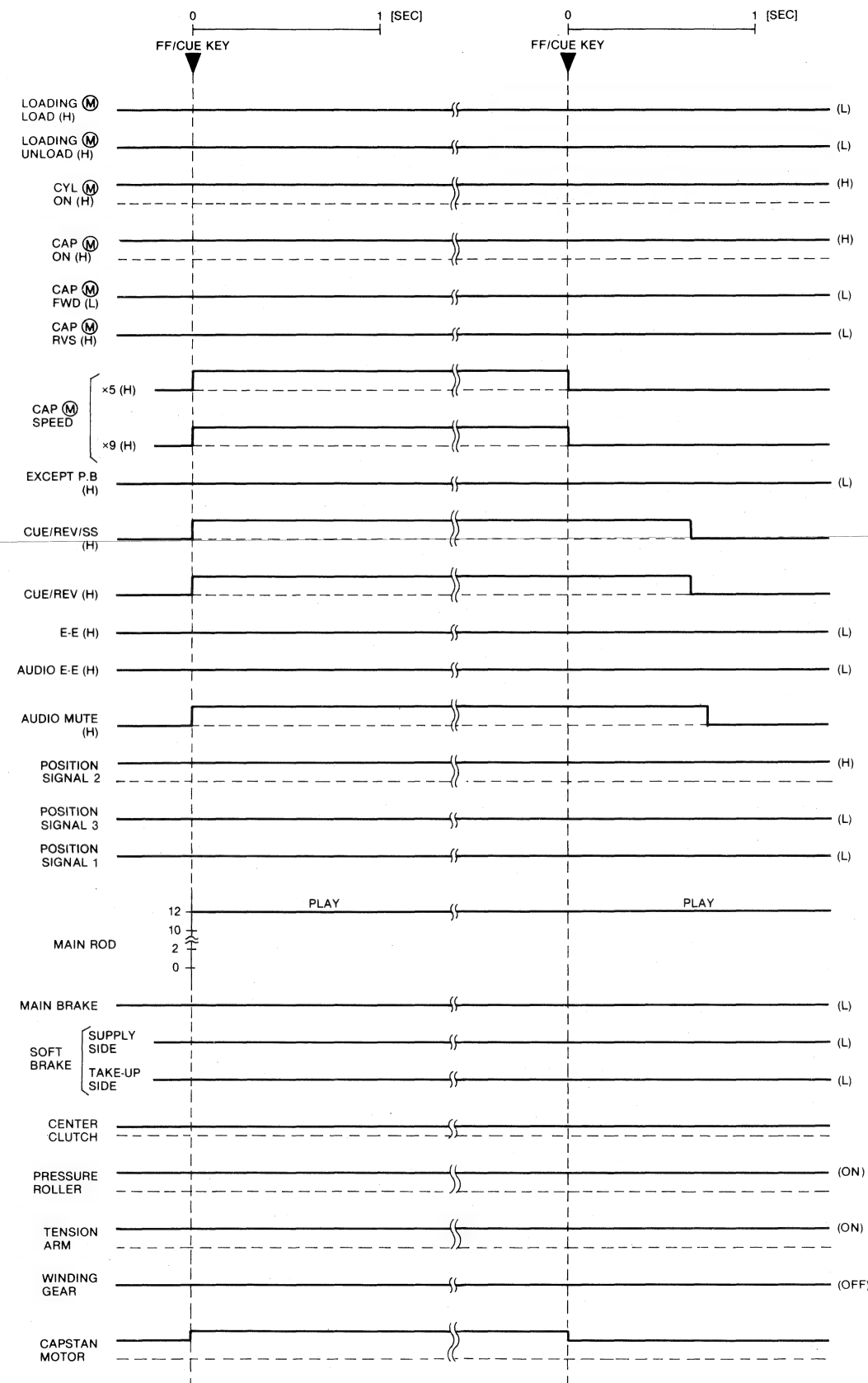
REC • PLAY → REC • PAUSE MODE TIMING CHART



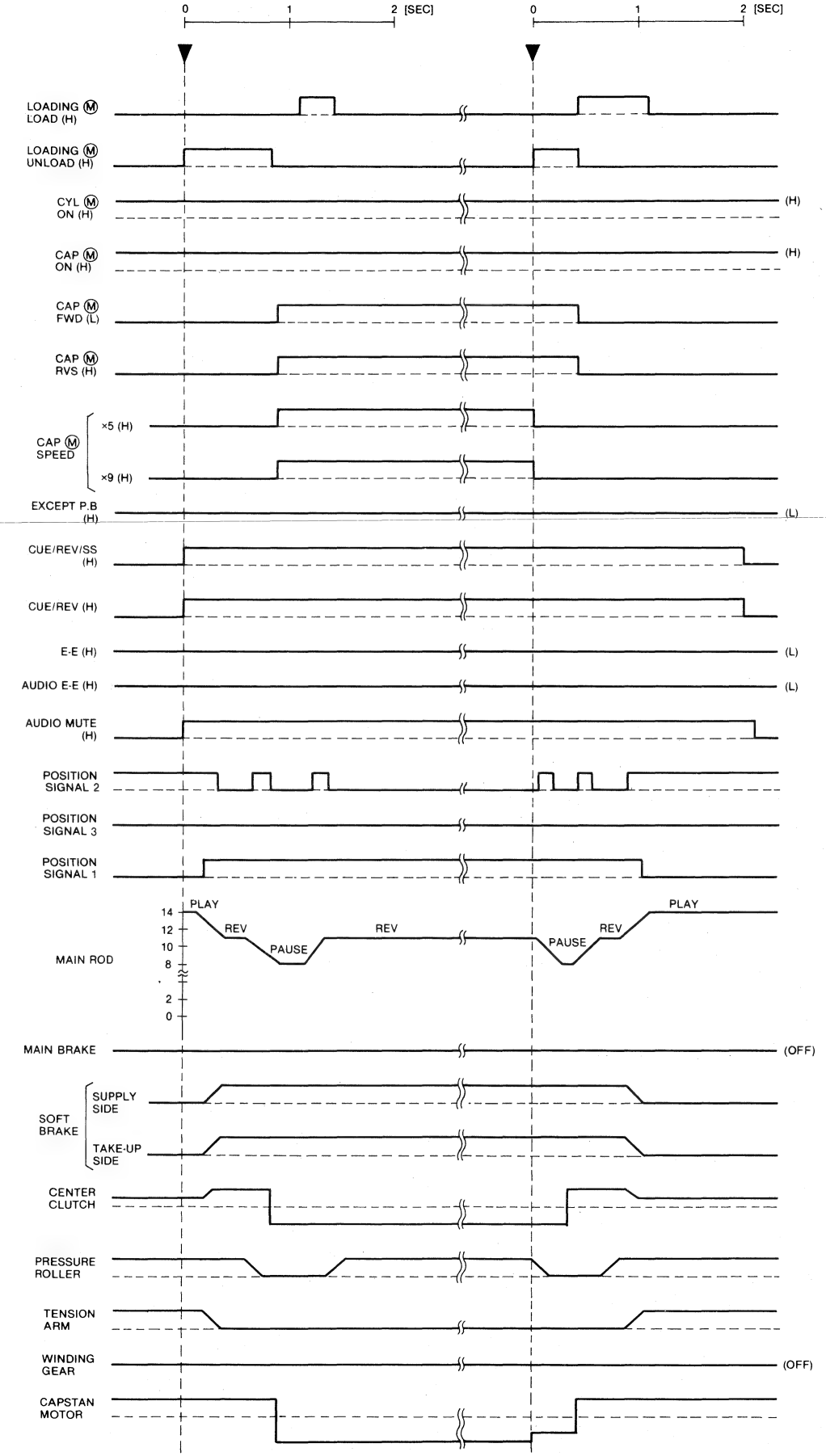
REC • PAUSE → REC • PLAY MODE TIMING CHART

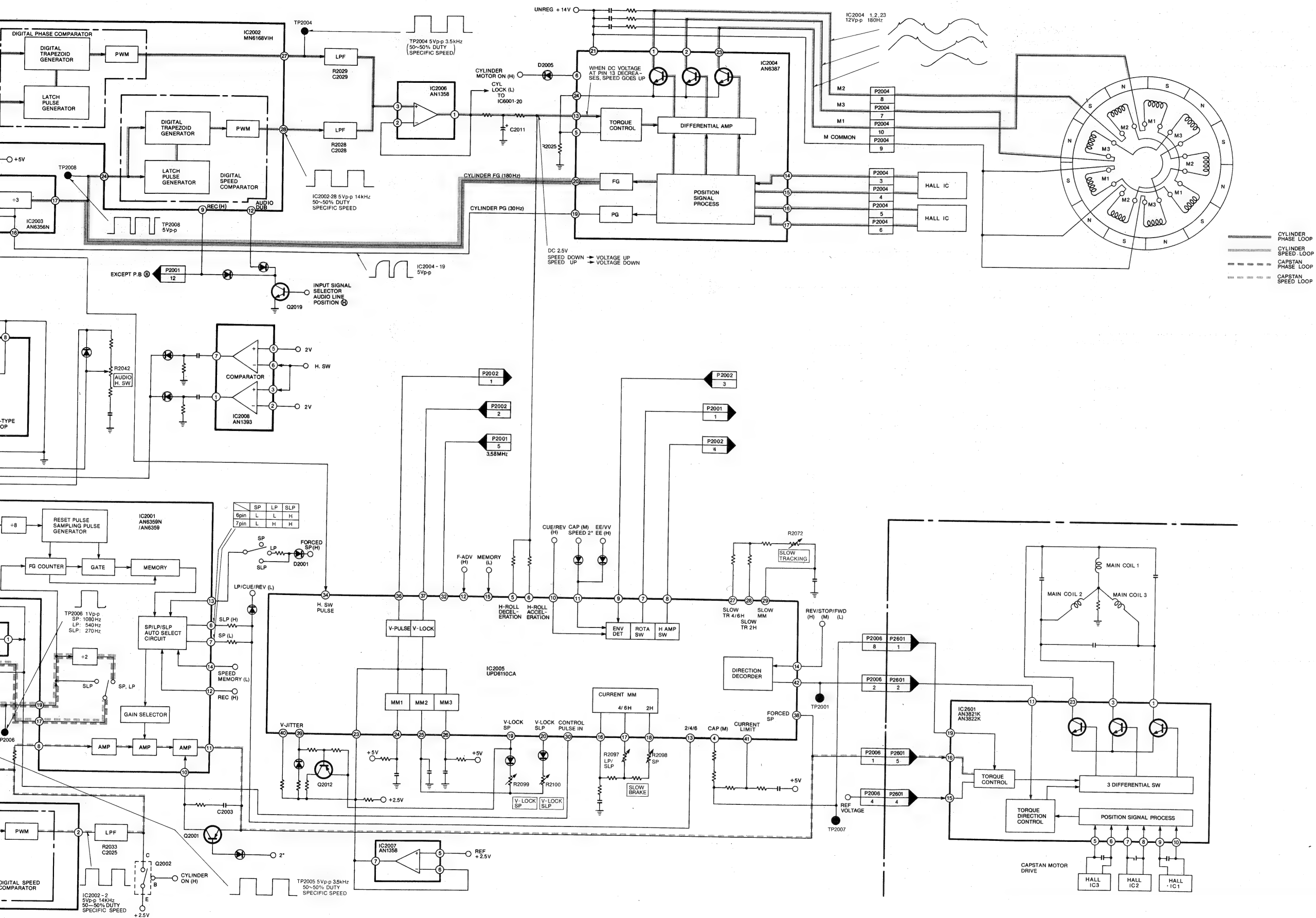


PLAY → CUE → PLAY MODE TIMING CHART

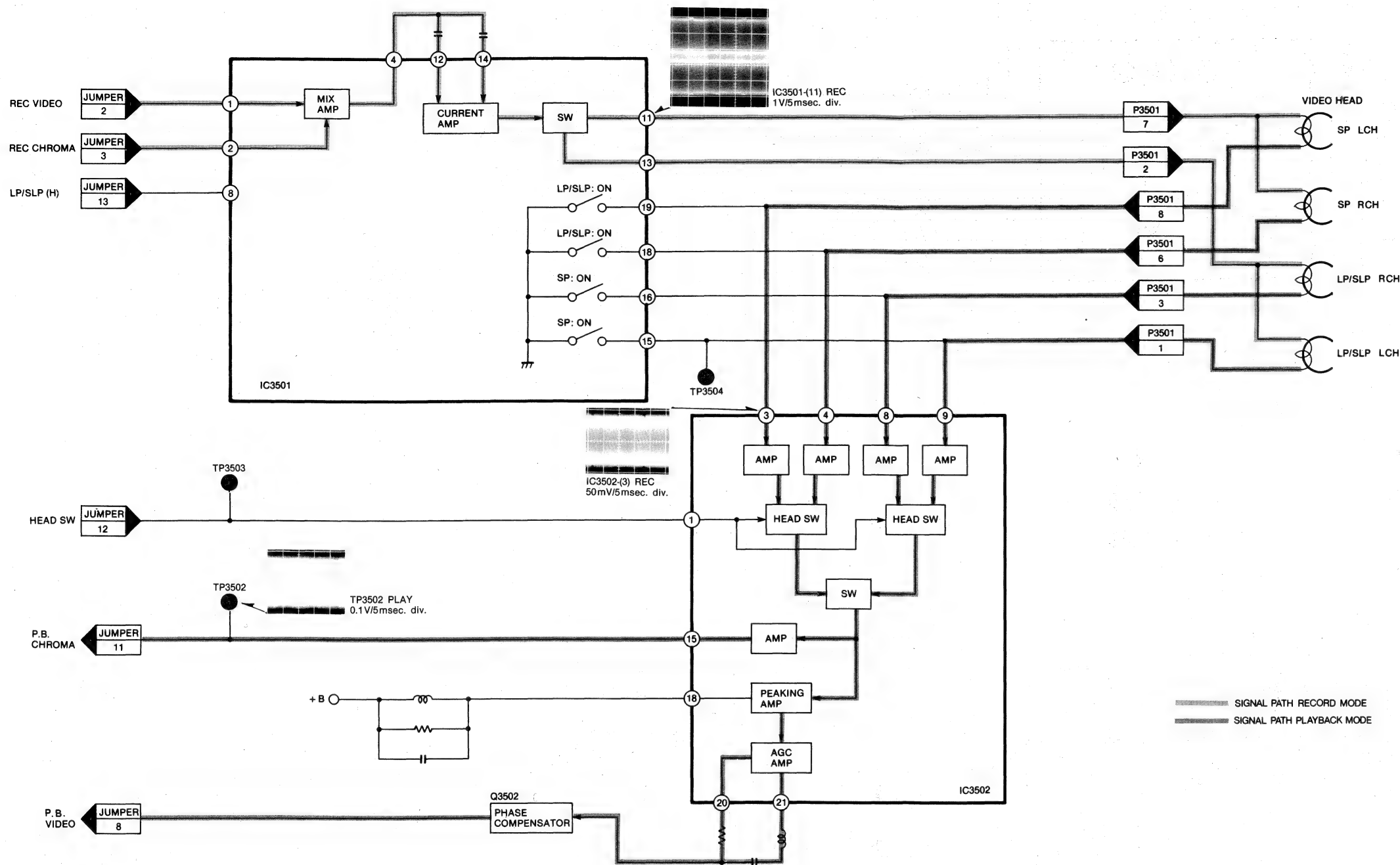


PLAY → REVIEW → PLAY MODE TIMING CHART

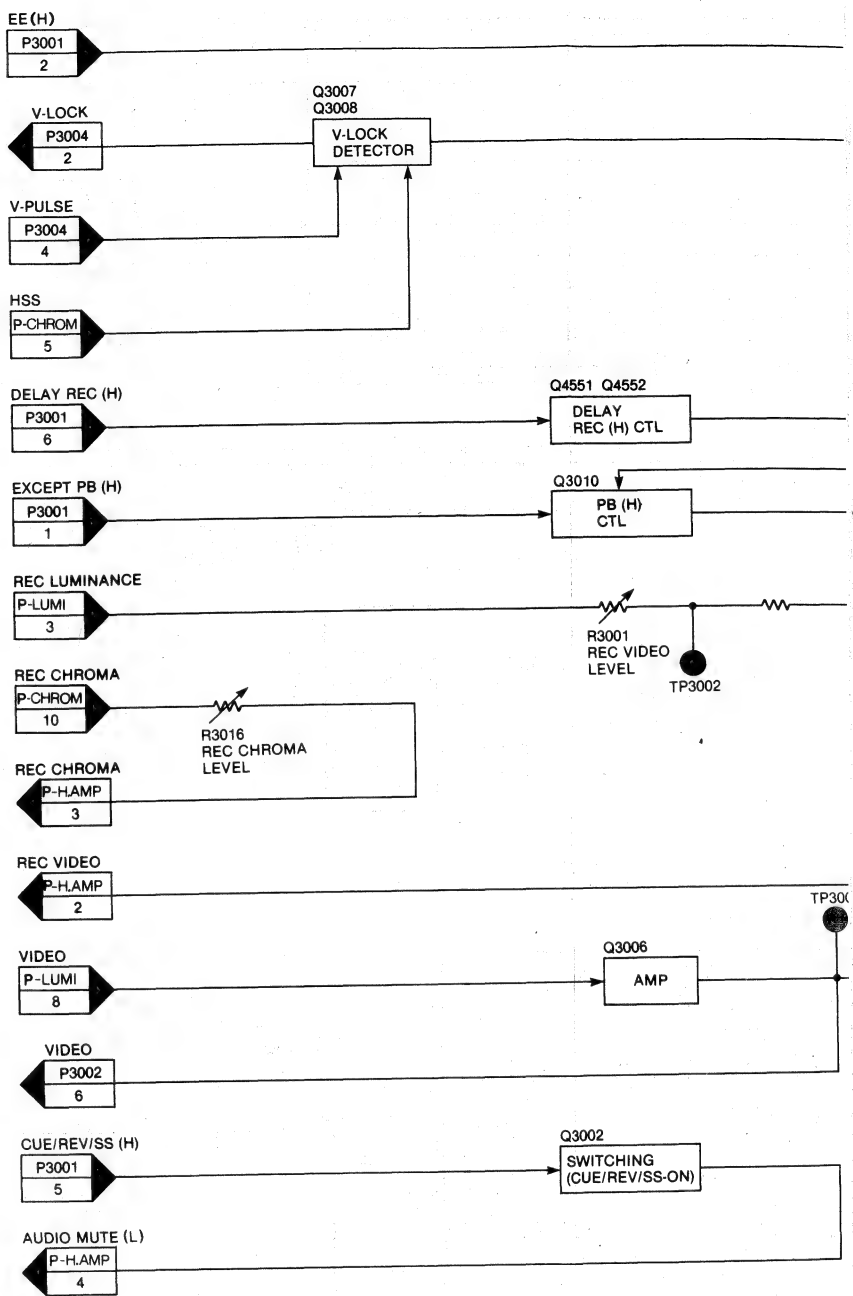


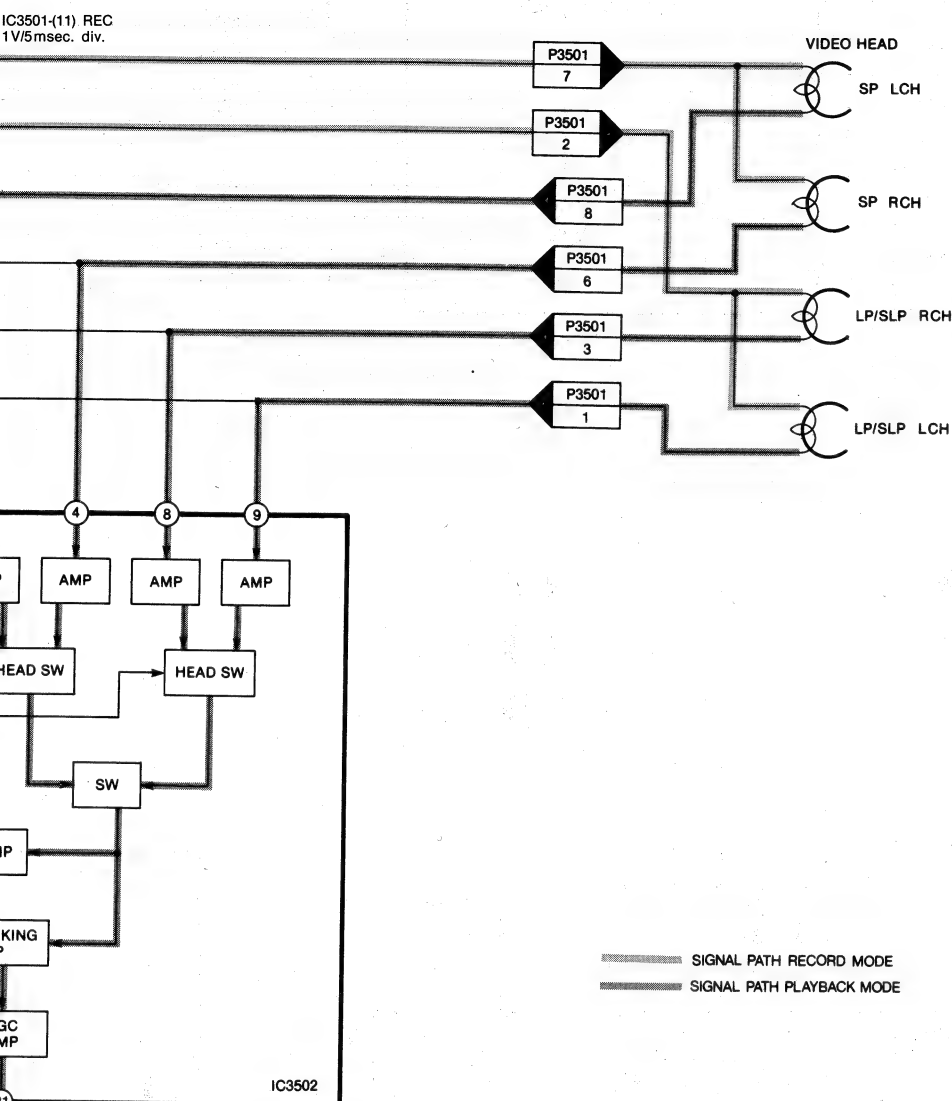


HEAD AMP BLOCK DIAGRAM



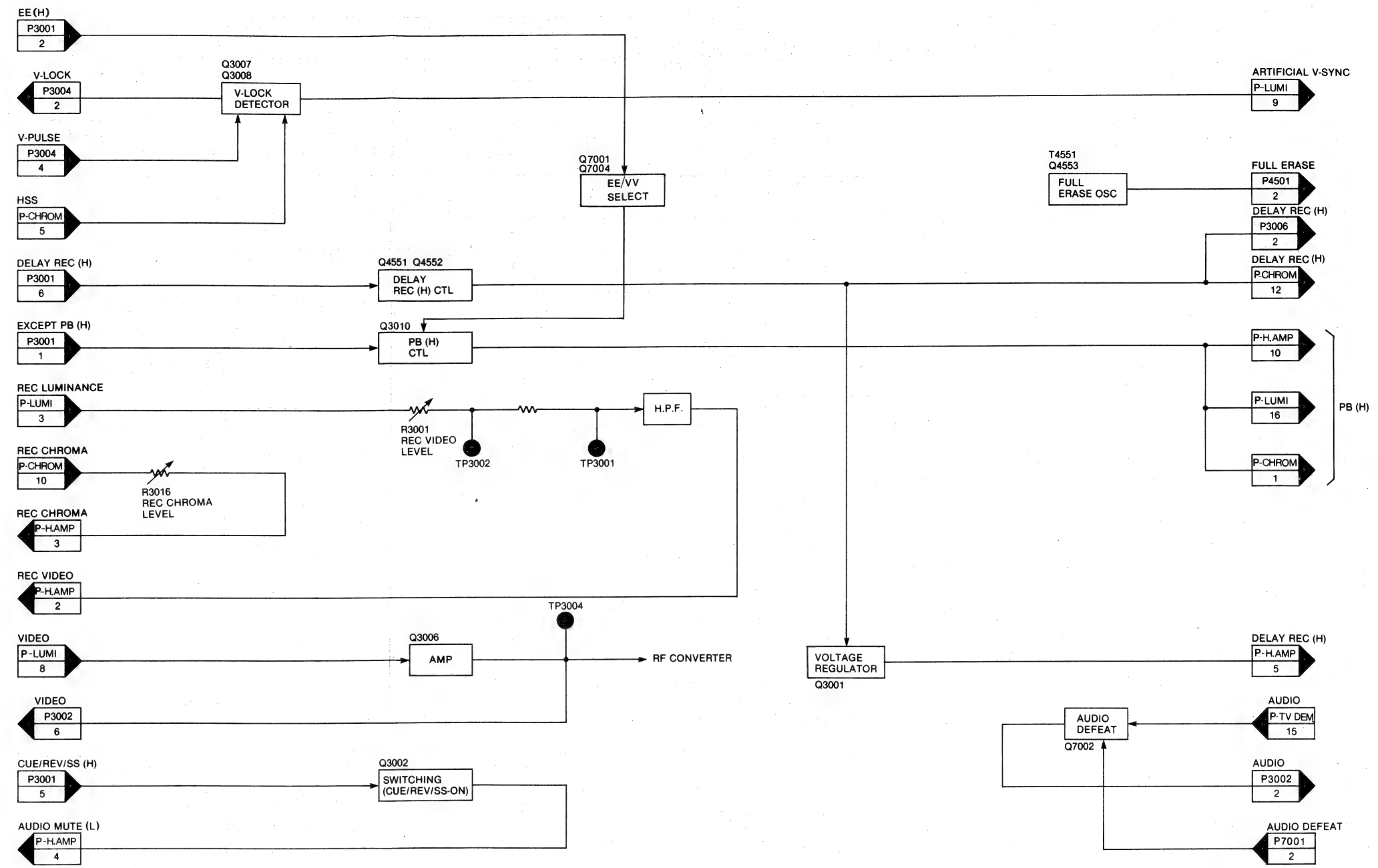
SIGNAL PROCESS BLOCK DIAGRAI





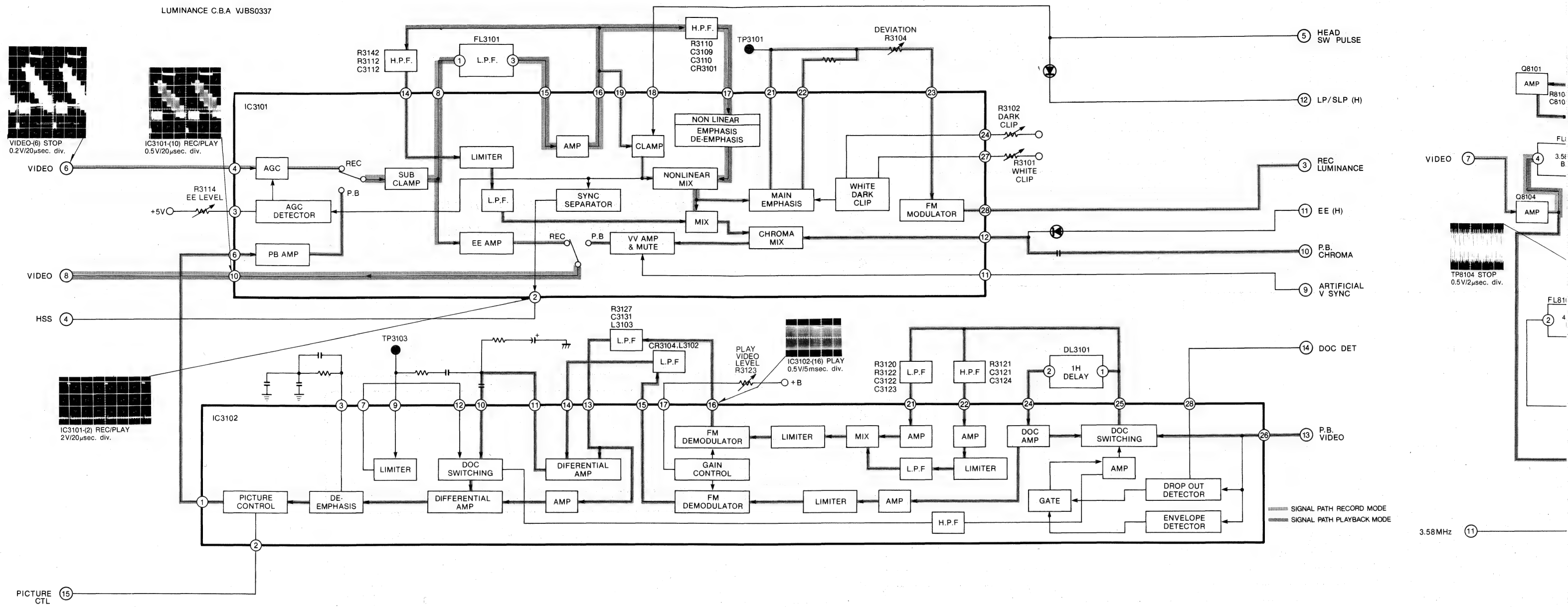
— SIGNAL PATH RECORD MODE
— SIGNAL PATH PLAYBACK MODE

SIGNAL PROCESS BLOCK DIAGRAM

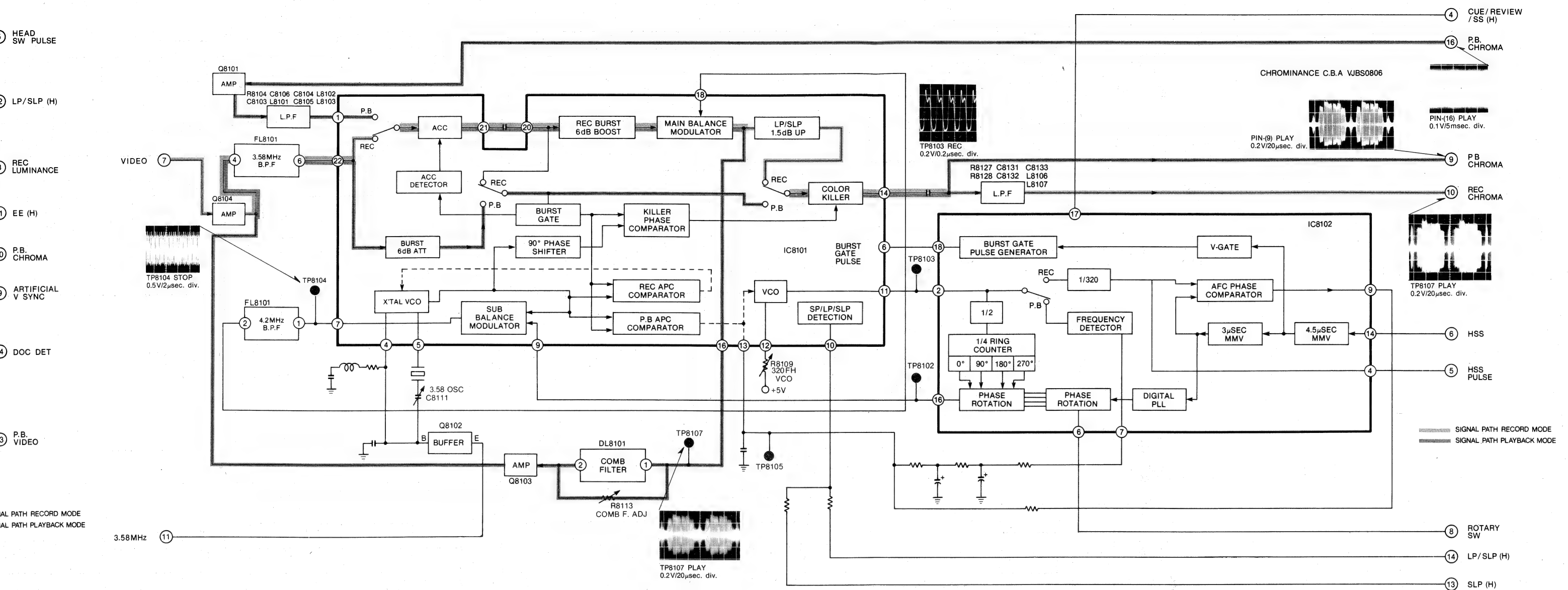


LUMINANCE BLOCK DIAGRAM

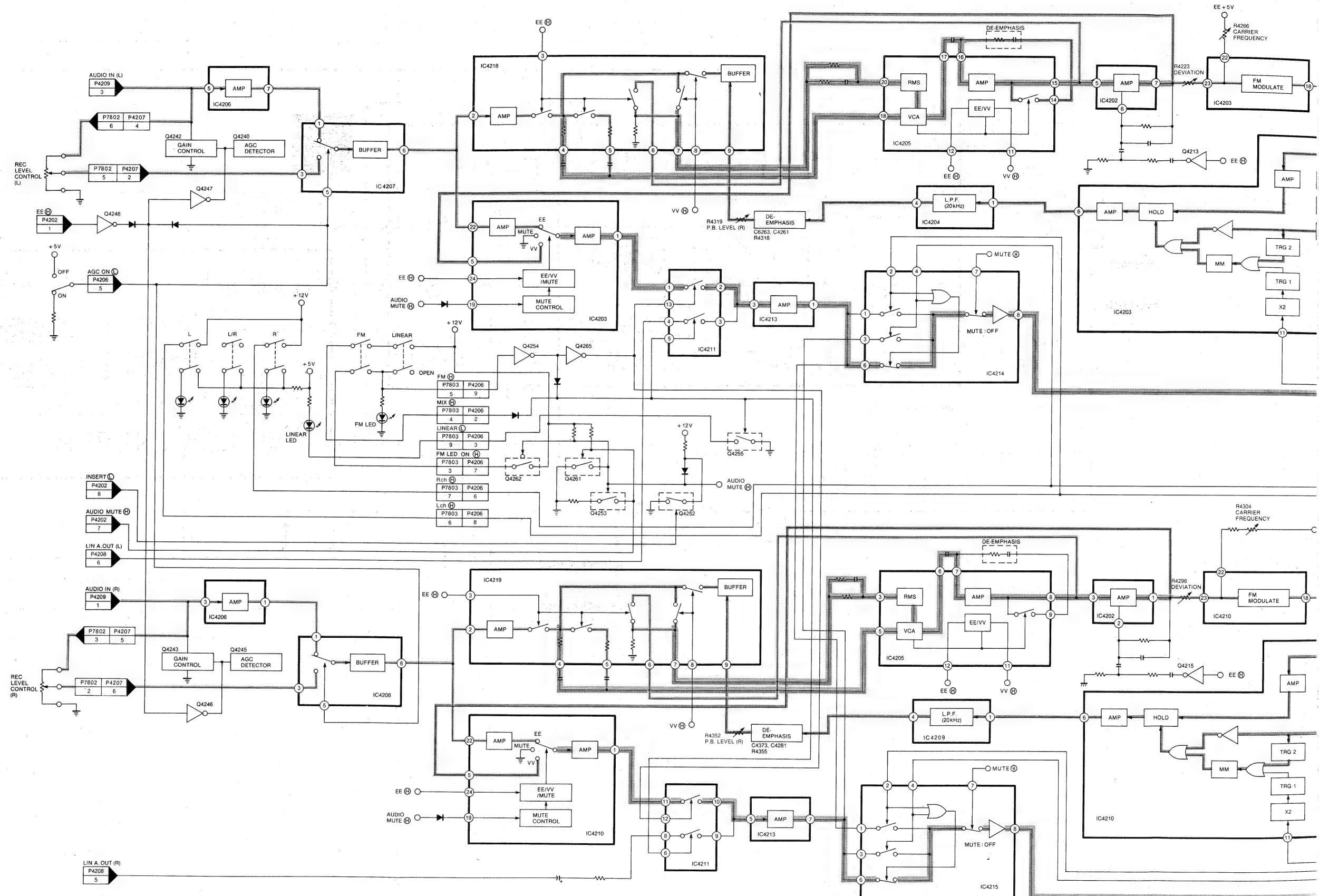
CHROMINANCE

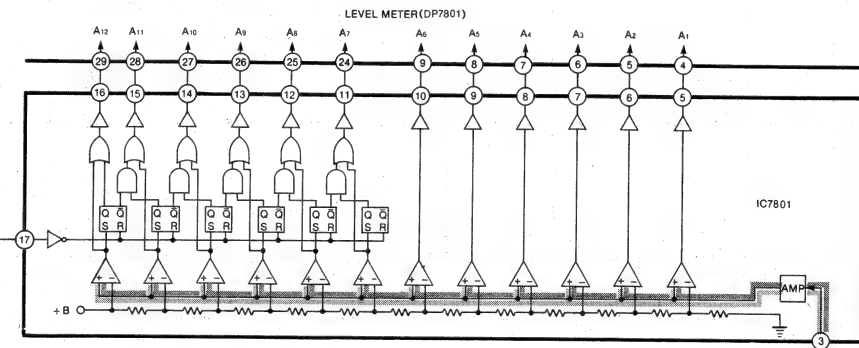
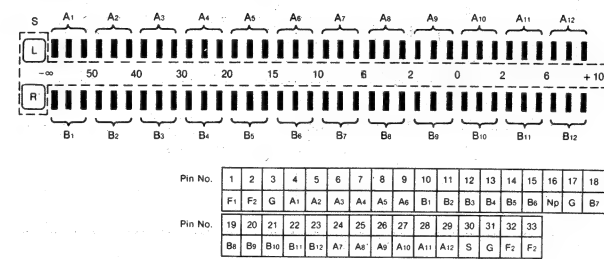
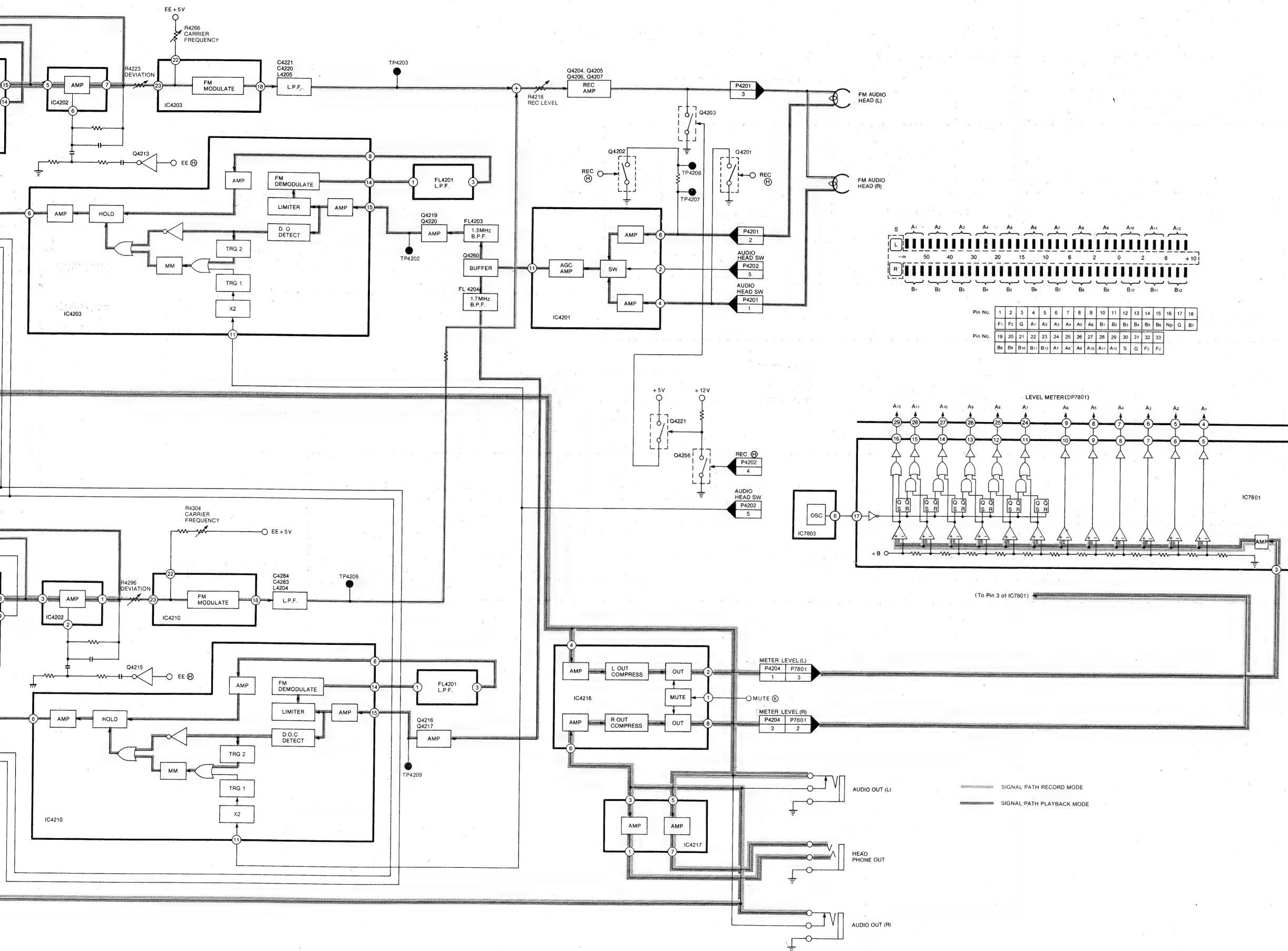


CHROMINANCE BLOCK DIAGRAM



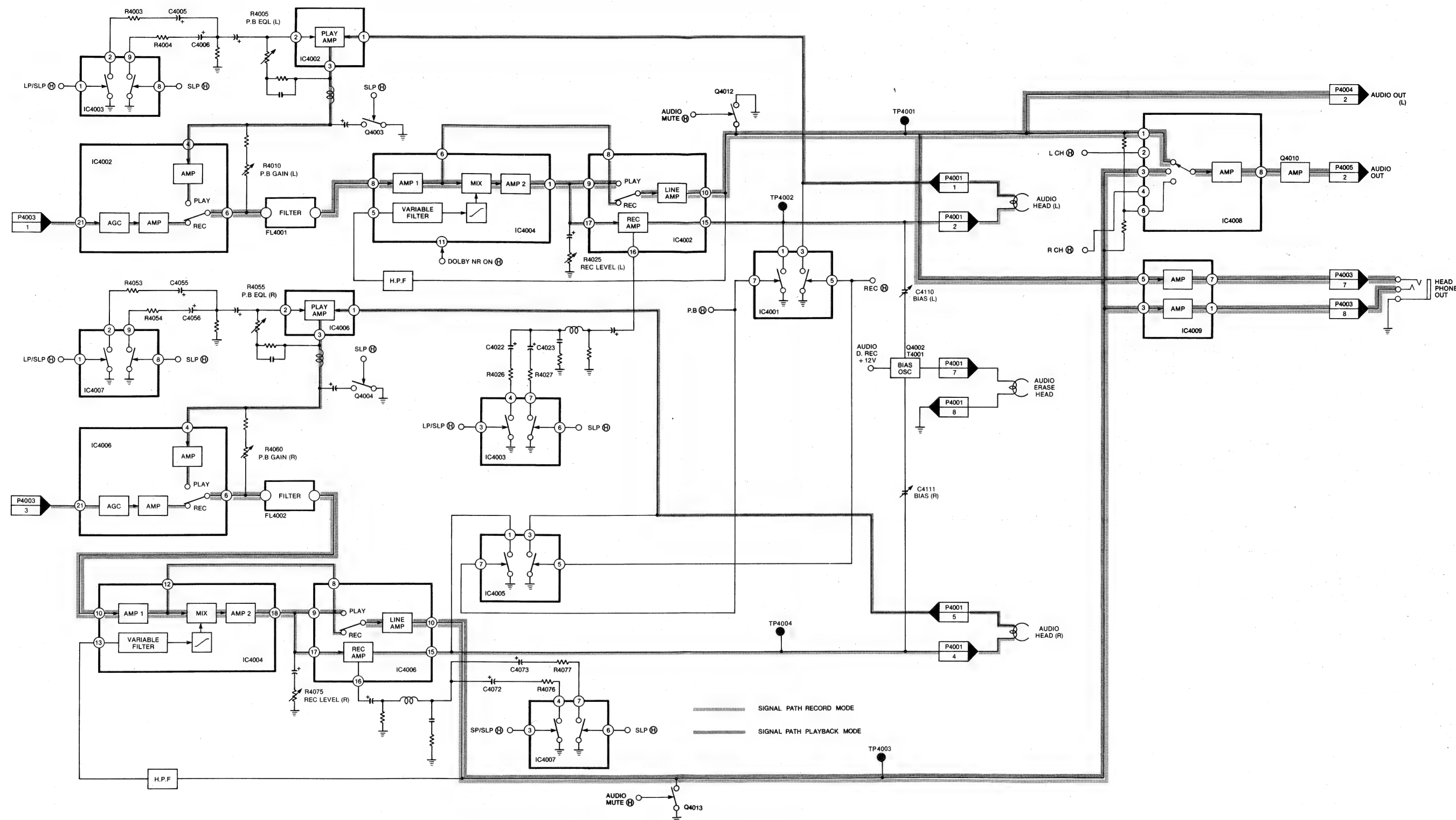
FM AUDIO BLOCK DIAGRAM



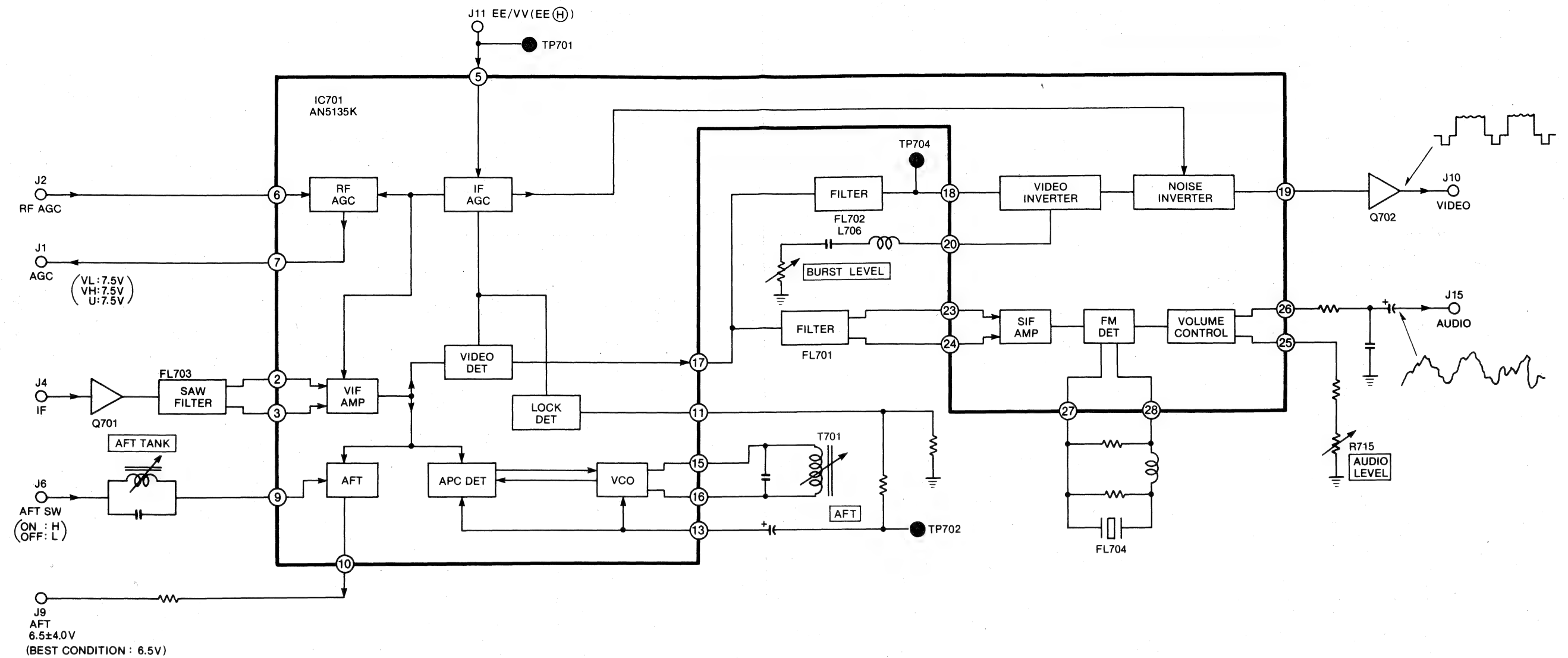


SIGNAL PATH RECORD MODE
SIGNAL PATH PLAYBACK MODE

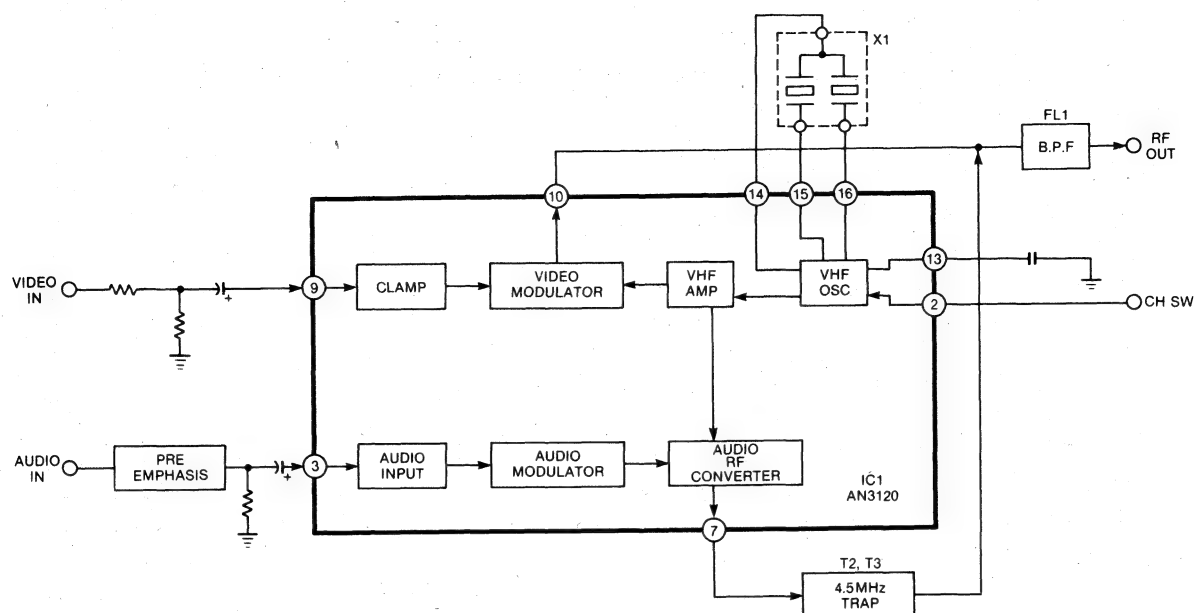
NORMAL AUDIO BLOCK DIAGRAM



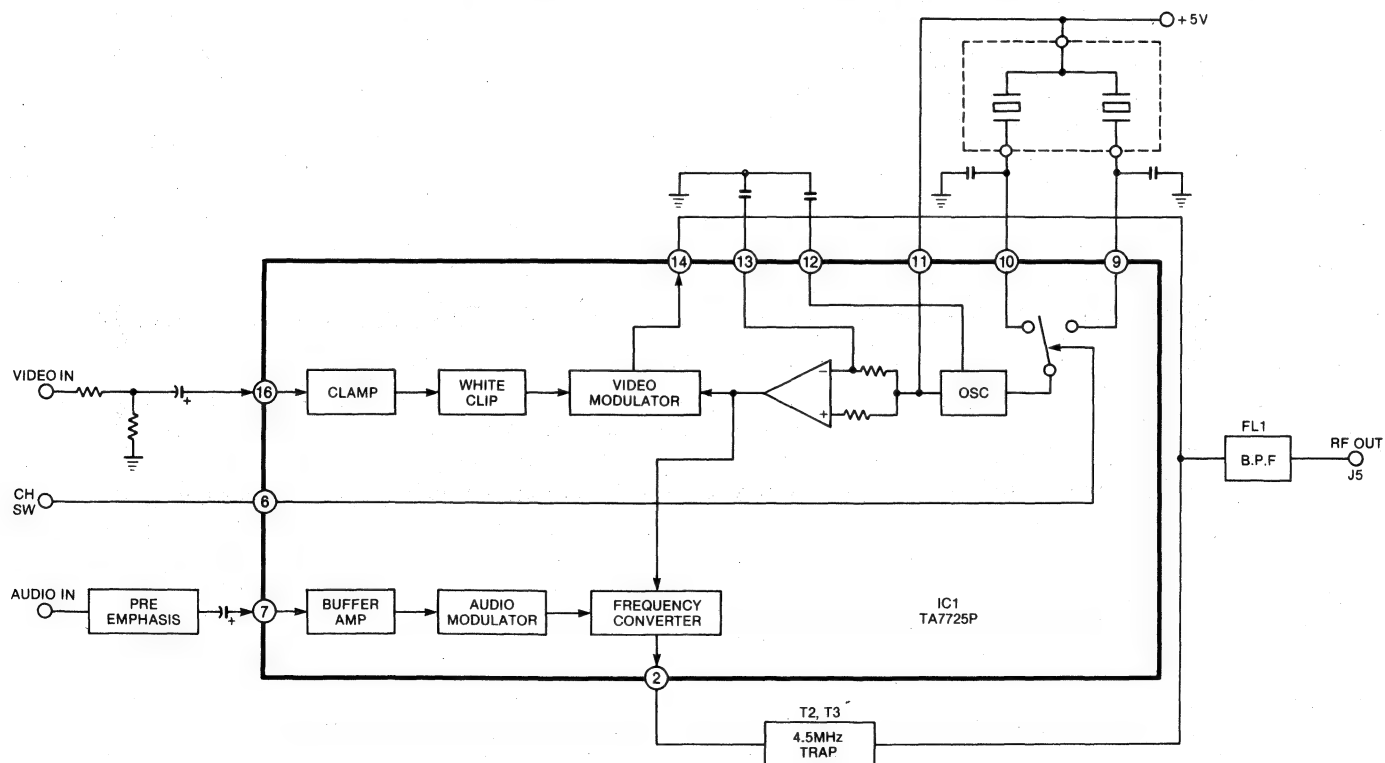
TV DEMODULATOR BLOCK DIAGRAM



RF CONVERTER BLOCK DIAGRAM (VEQS0252/0253)



RF CONVERTER BLOCK DIAGRAM (VEQS0254/0255)



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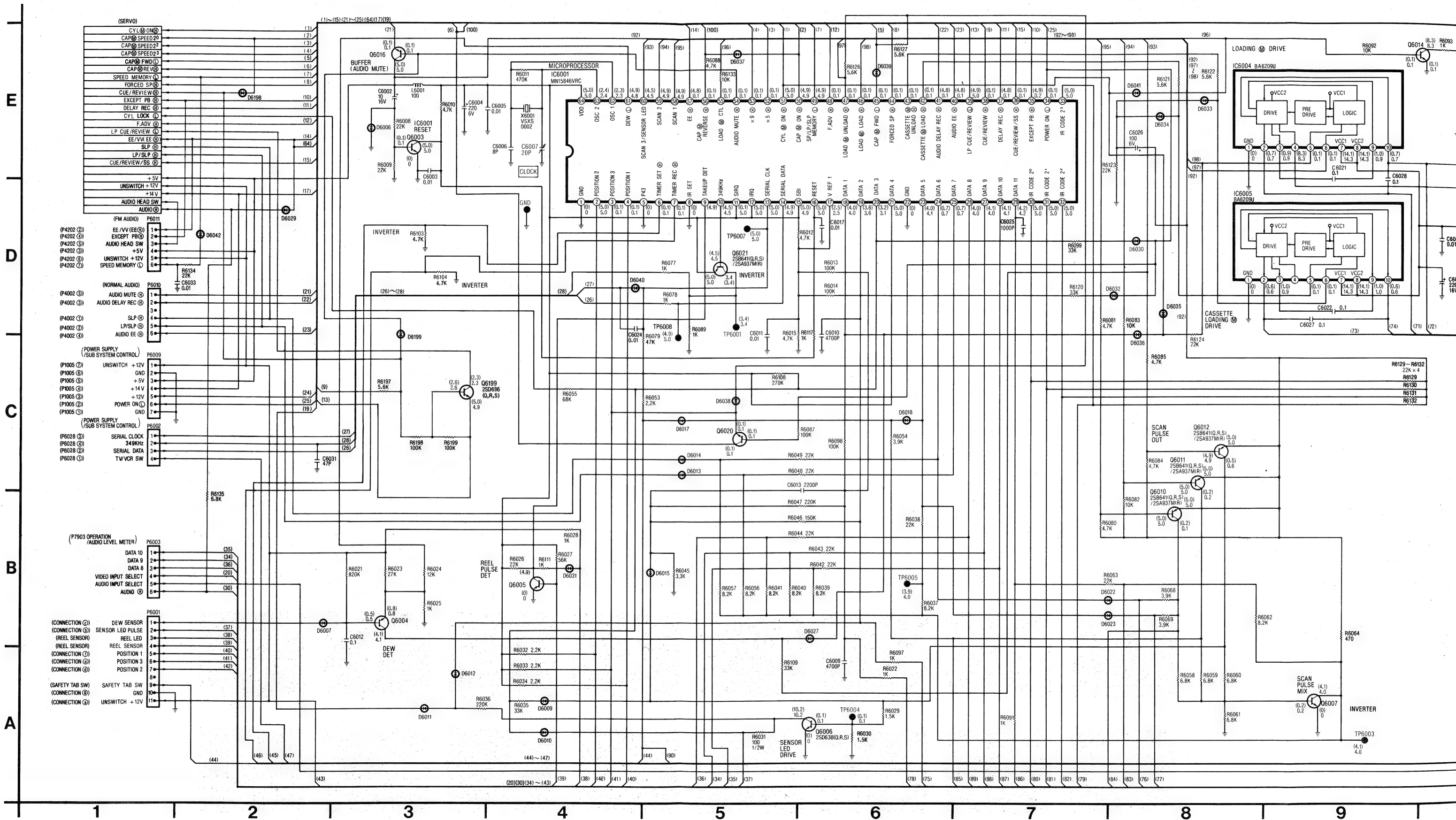
IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

MAIN SCHEMATIC DIAGRAM (SYSTEM CONTROL/SUB AUDIO SECTION)

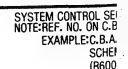
SYSTEM CONTROL SECTION
VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

SUB AUDIO SECTION
VOLTAGE MEASUREME
MONOSCOPE SIGN
MONOSCOPE SIGN




SUB AUDIO SECTION
VOLTAGE MEASUREMENT:
MONOSCOPE SIGNAL IN SP REC MODE WITH BRACKET.
MONOSCOPE SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



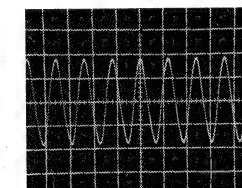
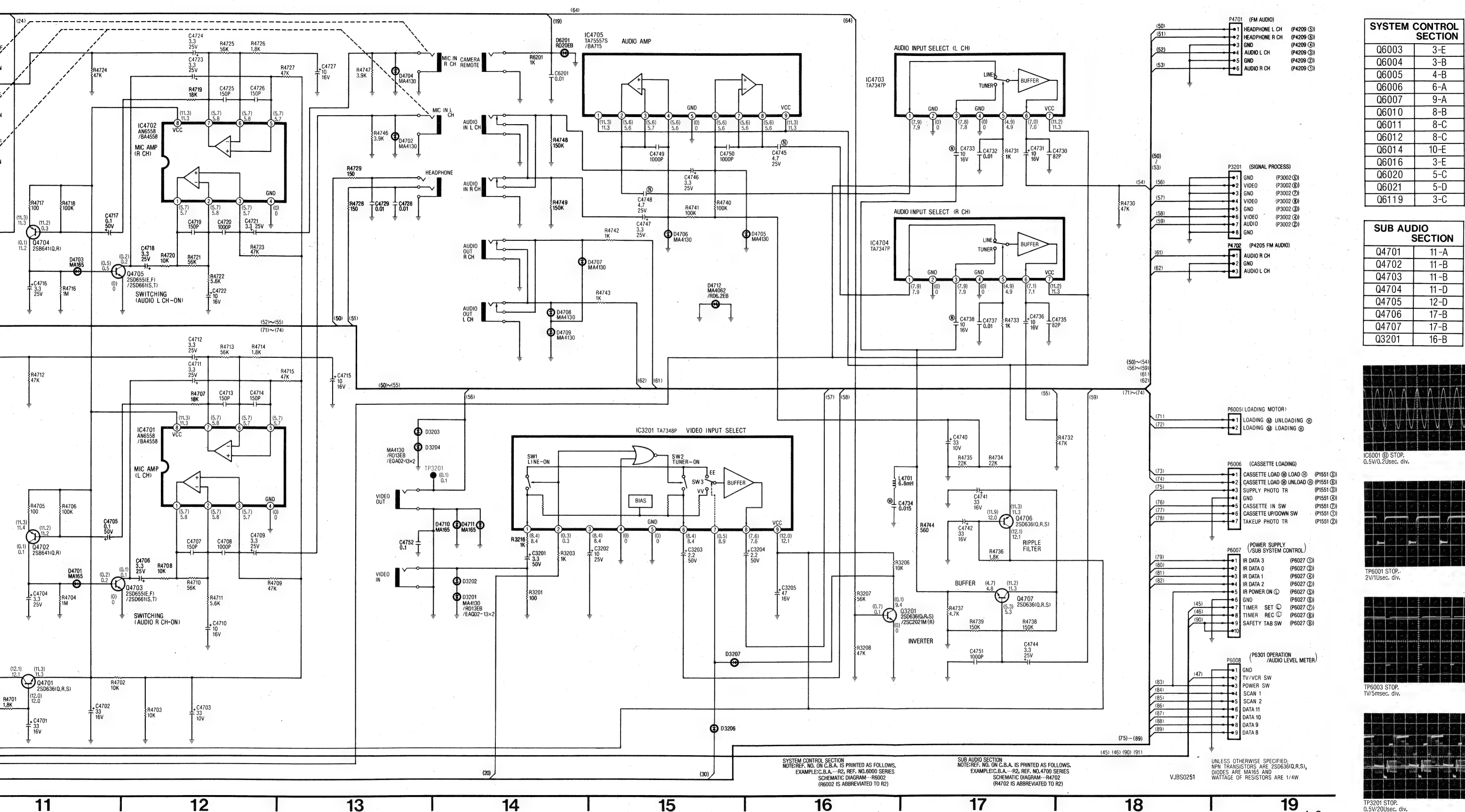
KET.
BRACKET.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

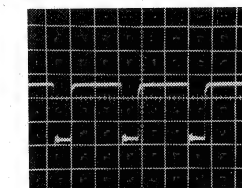
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

CALLOUTS NEXT TO WIRING PLUGS INDICATE
CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

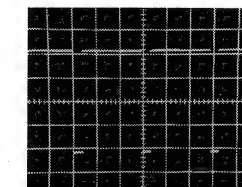
4-1
MAIN
SCHEMATIC DIAGRAM
(SYSTEM CONTROL
/SUB AUDIO SECTION)



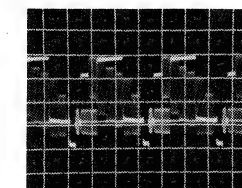
IC8001 @ STOP.
0.5V/0.2uSec. div.



TP6001 STOP.
2V/1uSec. div.



TP6003 STOP.
1V/5msec. div.



TP3201 STOP.
0.5V/20uSec. div.

4-2
MAIN SCHEMATIC DIAGRAM
(SERVO SECTION)

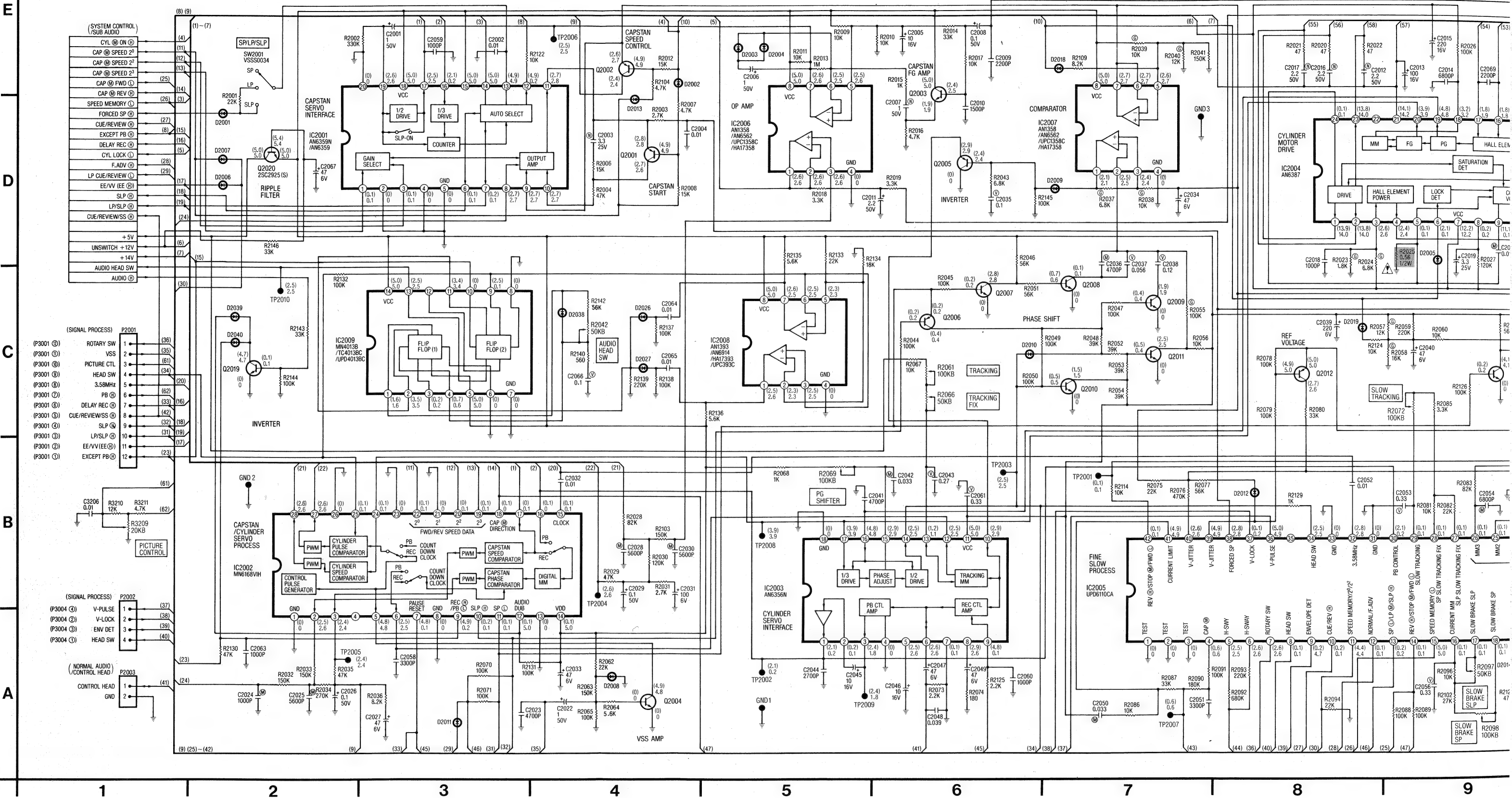
MAIN SCHEMATIC DIAGRAM (SERVO SECTION)

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚡ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE HANDLING TECHNIQUES DESCRIBED UNDER THE "ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

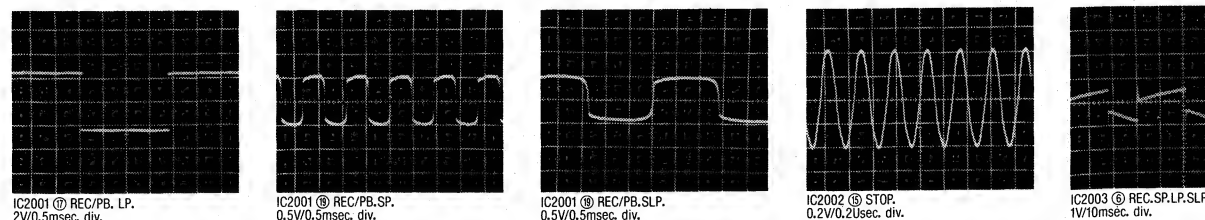
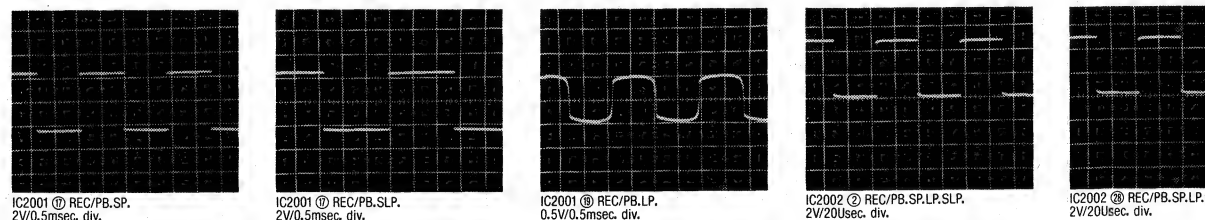
SERVO	
Q2001	4-D
Q2002	4-E
Q2003	6-D
Q2004	4-A
Q2005	6-D
Q2006	6-C
Q2007	6-C
Q2008	7-C
Q2009	7-C
Q2010	7-C
Q2011	7-C
Q2012	8-C
Q2013	10-B
Q2014	10-B
Q2015	11-B
Q2018	9-C
Q2019	2-C
Q2020	2-D

REF. NO.	IC2001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	0	0	0	0	0	0	0	0.8	4.8	4.8	4.9	4.9	0.1	0	4.9	0	0
REC	0.1	0	0.1	0	0	0.1	0.2	2.7	2.7	2.7	2.7	4.9	4.9	5.0	5.0	2.1	2.5	5.0	2.6	0
PLAY	0.1	0	0.1	0	0	0.1	0.1	2.7	2.7	2.7	2.8	0.2	4.9	5.0	5.0	0.2	2.5	5.0	2.6	0
CUE	0.1	0	5.0	0	0	0.2	0.2	2.7	2.7	2.7	2.7	0.2	4.9	5.0	5.0	0.3	2.3	5.0	2.6	0
REV	0	0	4.9	0	0	0.1	0.1	2.6	2.6	2.6	2.7	0.1	4.8	4.9	5.0	0.2	2.3	5.0	2.6	0
SLOW(1/4)	0.1	0	0.1	0	0	0.1	0.2	1.4	2.6	2.6	1.2	0.2	4.8	0.1	5.0	0.2	★	5.0	2.6	0
F.A	0.1	0	0.1	0	0	0.1	0.2	1.4	2.7	2.7	1.2	0.2	4.8	0.1	5.0	0.2	★	5.0	2.6	0

REF. NO.	IC2002																				
	MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	2.5	★	4.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REC	0	2.5	2.4	★	4.8	2.5	4.8	0	4.9	0.2	0.1	0.1	0	0.1	0.1	0.1	0.1	0	0.1	0.1	0
PLAY	0	2.6	2.4	★	4.8	2.5	0.1	0	0.2	0.1	0.1	5.0	0	5.0	0	0.1	0	0.1	0	0.1	0.1
CUE	0	0.1	0.1	★	0.1	0.1	0	0	0.1	0.1	0.1	4.9	0	5.0	0	1.7	0.3	2.4	0.1	0.1	5.0
REV	0	2.5	2.3	★	4.8	2.3	0	0	0	0.1	0.1	4.8	0	5.0	1.6	0.4	2.1	4.9	4.9	0	0
SLOW(1/4)	0	0.3	2.5	★	4.8	2.4	0.1	0	0.1	0.1	0.1	0.1	0	5.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
F.A	0	0.3	2.5	★	4.8	2.5	0.1	0	0.2	0.2	0.2	4.9	0	5.0	1.7	0.2	3.1	-0.1	0.1	0.1	0.1

REF. NO.	IC2002							
MODE	21	22	23	24	25	26	27	28
STOP	0	0	0	0	0	0	2.5	2.5
REC	0	0.1	0	0.1	0.1	0	2.6	2.6
PLAY	0	0.1	0	0.1	0.1	0	2.6	2.6
CUE	0	4.9	0	3.9	2.5	0	2.5	2.6
REV	0	4.8	0	3.8	2.5	0	2.5	2.5
SLOW(1/4)	0	0.1	0	3.9	2.5	0	2.7	2.5
F.A	0	0.1	0	3.9	2.5	0	2.6	2.6

REF. NO.	IC2003																				
	MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
	STOP	0.1	0.4	1.7	0	2.5	2.5	0	2.5	0	3.7	4.9	0	4.9	0	4.7	4.9	4.9	0		
	REC	2.1	0.2	2.4	0	2.5	2.6	0.1	2.9	4.8	2.9	5.0	2.5	1.2	2.5	2.9	4.8	3.9	0		
	PLAY	0.2	0.1	1.8	0	2.6	2.6	0.1	2.6	0.1	2.9	5.0	2.5	1.1	2.5	2.9	4.8	3.9	0		
	CUE	0.3	-0.4	1.9	0	2.5	2.6	0.1	2.6	0.1	2.9	5.0	2.5	1.1	2.5	2.9	2.1	3.9	0		
	REV	0.4	-0.5	1.8	0	2.5	2.5	0	2.5	0	2.8	5.0	2.4	1.1	2.5	2.9	4.8	3.8	0		
	SLOW(1/4)	0.1	0.4	1.8	0	2.6	2.6	0.1	2.6	0.1	2.9	5.0	2.5	1.2	2.5	2.9	4.8	3.9	0		
	F.A	0.2	0.4	1.8	0	2.5	2.6	0.1	2.6	0.1	2.9	5.0	2.4	1.2	2.5	1.5	4.8	3.9	0		



1. CUE, REVIEW, FRAME ADVANCE, SLOW.
COLOR BAR SIGNAL IN SLP MODE.
2. OTHERS
COLOR BAR SIGNAL IN SP MODE.

★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

SERVO	
Q2001	4-D
Q2002	4-E
Q2003	6-D
Q2004	4-A
Q2005	6-D
Q2006	6-C
Q2007	6-C
Q2008	7-C
Q2009	7-C
Q2010	7-C
Q2011	7-C
Q2012	8-C
Q2013	10-B
Q2014	10-B
Q2015	11-B
Q2018	9-C
Q2019	2-C
Q2020	2-D



REF.NO.	Q2001			Q2002			Q2003			Q2004			Q2005			Q2006		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0.1	0.3	0.8	0.1	1.2	0	1.9	2.4	5.0	0	0	4.8	3.8	3.3	0.1	0.1	0.1	0.4
REC	2.8	4.9	2.7	2.6	4.9	2.4	1.9	2.4	5.0	0	0	4.9	2.9	2.4	0	0.2	0.2	0.4
PLAY	2.8	4.9	2.6	2.7	4.9	2.4	1.9	2.5	5.0	0	0	4.8	2.9	2.4	0	0.2	0.2	0.4
CUE	2.7	4.9	2.6	2.6	4.9	2.3	1.9	2.4	5.0	0	0	4.8	2.9	2.3	0	4.1	4.2	0.4
REV	2.7	4.9	2.6	2.6	4.9	2.4	1.9	2.4	5.0	0	0	4.8	2.8	2.3	0	0.1	0.1	0.4
SLOW(1/4)	1.2	0.7	1.3	2.7	2.0	2.6	1.9	2.4	5.0	0	0	4.8	2.9	2.4	0	0.2	0.1	0.4
F.A	1.2	0.6	1.2	2.7	2.0	2.6	1.9	2.5	5.0	0	0	4.8	2.9	2.4	0	0.2	0.2	0.4
REF.NO.	Q2007			Q2008			Q2009			Q2010			Q2011			Q2012		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0	0.1	2.8	0	0.6	0	0	0.4	0.1	0	0.2	2.8	0	0.6	0.1	5.0	4.9	1.9
REC	0	0.2	2.8	0.1	0.7	0	0	0.4	1.9	0	0.5	1.5	0	0.5	2.5	5.0	4.9	2.7
PLAY	0	0.2	2.8	0.1	0.6	0	0	0.4	1.9	0	0.5	1.5	0	0.4	2.5	5.0	5.0	2.6
CUE	0	0.7	0.1	0.1	0.7	0	0	0.4	1.8	0	0.5	1.5	0	0.4	2.5	5.0	2.6	4.9
REV	0	0.1	2.8	0	0.6	0	0	0.4	1.8	0	0.4	1.4	0	0.4	2.5	4.9	4.9	2.6
SLOW(1/4)	0	0.2	2.8	0.1	0.6	0	0	0.4	1.9	0	0.5	1.5	0	0.4	2.5	5.0	4.9	2.7
F.A	0	0.2	2.8	0.1	0.6	0	0	0.4	1.9	0	0.5	1.5	0	0.4	2.5	5.0	4.9	2.7
REF.NO.	Q2013			Q2014			Q2015			Q2018			Q2019			Q2020		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	11.3	11.8	14.2	14.2	14.2	11.8	0	0.1	14.2	0	0	0	0	0	4.7	5.0	5.4	5.0
REC	11.0	11.7	14.1	14.1	14.1	11.7	0	0.1	14.1	0	0.2	4.1	0	0.1	4.7	5.0	5.4	5.0
PLAY	11.0	11.6	14.3	14.3	14.3	11.6	0	0.1	14.2	0	0.2	4.1	0	0.1	4.7	5.0	5.4	5.0
CUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	4.7	5.0	5.4	5.0
REV	13.5	14.2	14.2	14.2	13.5	14.2	0	0.7	0.1	0	0.2	4.7	0	0.1	4.7	5.0	5.4	5.0
SLOW(1/4)	13.6	14.2	14.2	14.2	13.5	14.2	0	0.7	0.1	0	0.2	4.7	0	0.1	4.7	5.0	5.4	5.0
F.A	13.6	14.2	14.2	14.2	13.5	14.2	0	0.7	0.1	0	0.2	4.7	0	0.1	4.7	5.0	5.4	5.0

REF. NO.	IC2001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	0	0	0	0	0	0	0	0.8	4.8	4.8	4.9	4.9	0.1	0	4.9	0	0
REC	0.1	0	0.1	0	0	0.1	0.2	2.7	2.7	2.7	2.7	4.9	4.9	5.0	5.0	2.1	2.5	5.0	2.6	0
PLAY	0.1	0	0.1	0	0	0.1	0.1	2.7	2.7	2.7	2.8	0.2	4.9	5.0	5.0	0.2	2.5	5.0	2.6	0
CUE	0.1	0	5.0	0	0	0.2	0.2	2.7	2.7	2.7	2.7	0.2	4.9	5.0	5.0	0.3	2.3	5.0	2.6	0
REV	0	0	4.9	0	0	0.1	0.1	2.6	2.6	2.6	2.7	0.1	4.8	4.9	5.0	0.2	2.3	5.0	2.6	0
SLOW(1/4)	0.1	0	0.1	0	0	0.1	0.2	1.4	2.6	2.6	1.2	0.2	4.8	0.1	5.0	0.2	★	5.0	2.6	0
F.A	0.1	0	0.1	0	0	0.1	0.2	1.4	2.7	2.7	1.2	0.2	4.8	0.1	5.0	0.2	★	5.0	2.6	0

REF.NO.	IC2002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	2.5	★	4.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REC	0	2.5	2.4	★	4.8	2.5	4.8	0	4.9	0.2	0	0.1	0	0.1	0.1	0.1	0	0.1	0.1	0
PLAY	0	2.6	2.4	★	4.8	2.5	0.1	0	0.2	0.1	0.1	5.0	0	5.0	0.1	0	0.1	0	0.1	0.1
CUE	0	0.1	0.1	★	0.1	0.1	0	0	0.1	0.1	0.1	4.9	0	5.0	1.7	0.3	2.4	0.1	0.1	5.0
REV	0	2.5	2.3	★	4.8	2.3	0	0	0	0.1	0.1	4.8	0	5.0	1.6	0.4	2.1	4.9	4.9	0
SLOW(1/4)	0	0.3	2.5	★	4.8	2.4	0.1	0	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
F.A	0	0.3	2.5	★	4.8	2.5	0.1	0	0.2	0.2	0.2	4.9	0	5.0	1.7	0.2	3.1	-0.1	0.1	0.1

[illegible]

REF. NO.	IC2003																	
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STOP	0.1	0.4	1.7	0	2.5	2.5	0	2.5	0	3.7	4.9	0	4.9	0	4.7	4.9	4.9	0
REC	2.1	0.2	2.4	0	2.5	2.6	0.1	2.9	4.8	2.9	5.0	2.5	1.2	2.5	2.9	4.8	3.9	0
PLAY	0.2	0.1	1.8	0	2.6	2.6	0.1	2.6	0.1	2.9	5.0	2.5	1.1	2.5	2.9	4.8	3.9	0
CUE	0.3	-0.4	1.9	0	2.5	2.6	0.1	2.6	0.1	2.9	5.0	2.5	1.1	2.5	2.9	2.1	3.9	0
REV	0.4	-0.5	1.8	0	2.5	2.5	0	2.5	0	2.8	5.0	2.4	1.1	2.5	2.9	4.8	3.8	0
SLOW(1/4)	0.1	0.4	1.8	0	2.6	2.6	0.1	2.6	0.1	2.9	5.0	2.5	1.2	2.5	2.9	4.8	3.9	0
F.A	0.2	0.4	1.8	0	2.5	2.6	0.1	2.6	0.1	2.9	5.0	2.4	1.2	2.5	1.5	4.8	3.9	0

[illegible]

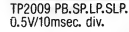
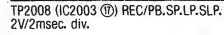
REF. NO.	IC2005																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	0.5	1.0	1.0	4.9	0	0	0.2	4.2	0	0.1	2.2	4.9	0	0	0	4.9	0.2
REC	0	0	0	0.6	2.5	2.6	2.6	0.1	0.2	0.2	4.4	0.1	0.2	0.1	5.0	0.1	0.1	0.1	5.0	0.3
PLAY	0	0	0	0.6	2.5	2.6	2.6	0.1	4.7	0.1	4.4	0.1	0.2	0.1	5.0	0.1	0.1	0.1	5.0	0.3
CUE	0	0	0	0.6	2.5	2.5	2.1	2.5	2.5	4.9	4.4	0.1	0.2	0.1	5.0	0.1	0.1	0.1	5.0	0.3
REV	0	0	0	0.5	2.4	2.5	2.0	2.6	2.3	4.9	4.3	0	0.1	4.5	4.9	0	0	0	4.9	0.2
SLOW(1/4)	0	0	0	★	2.5	2.3	0.3	2.3	2.4	0.2	0.1	★	0.2	0.1	0.1	0.1	0.2	0.3	5.0	0.3
F.A	0	0	0	★	2.5	2.5	0.1	2.3	2.5	0.3	0.1	★	0.2	0.1	0.1	0.1	0.1	0.3	5.0	0.3

REF.NO.	IC2005																			
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	5.0	0	1.8	0	0	0	0	0	0	0	0	2.8	0	0	★	4.9	0	0.8	4.9	1.7
REC	5.0	0	2.6	0.1	0.1	0.1	0.1	0.1	0.1	2.1	0	2.8	0	2.5	★	5.0	0.1	2.8	4.9	2.6
PLAY	5.0	0	2.6	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0	2.8	0	2.5	★	4.9	0.2	2.8	4.9	2.6
CUE	5.0	0	2.6	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0	2.8	0	2.5	★	4.9	0.3	2.7	4.9	2.5
REV	5.0	0	2.6	0.1	0	0.1	0	0	0	0.2	0	2.8	0	2.5	★	4.8	0.3	2.7	0	2.5
SLOW(1/4)	5.0	0	2.7	0.1	0.1	0.1	0.3	0.3	0.1	0.2	0	2.8	0	2.5	★	4.8	0.3	0.4	4.7	2.4
F.A	5.0	0	2.7	0.1	0.1	0.1	0.2	0.3	0.1	0.2	0	2.8	0	2.5	★	4.9	0.3	0.4	4.6	2.4
REF.NO.	IC2005					IC9006					IC2007									

MODE	41	42	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8		
STOP	4.9	2.1	1.1	1.1	1.0	0	2.5	2.5	2.5	4.9	3.7	0	2.9	0	1.8	1.8	1.8	5.0		
REC	4.9	0.1	2.6	2.6	2.6	0	2.5	2.5	2.6	5.0	2.1	2.5	2.4	0	2.6	2.7	2.7	5.0		
PLAY	4.9	0.1	2.6	2.6	2.6	0	2.6	2.5	2.6	5.0	2.1	2.5	2.4	0	2.7	2.7	2.7	5.0		
CUE	4.9	0.1	2.6	2.6	2.6	0	2.6	2.5	2.6	5.0	2.1	2.5	2.3	0	2.7	2.7	2.7	5.0		
REV	4.9	4.9	2.6	2.6	2.5	0	2.5	2.5	2.5	4.9	2.1	2.4	2.3	0	2.6	2.6	2.6	5.0		
SLOW(1/4)	★	★	2.6	2.6	2.6	0	2.5	2.5	2.5	5.0	2.1	2.5	2.3	0	2.6	2.7	2.7	5.0		
F.A	★	★	2.6	2.6	2.6	0	2.5	2.5	2.5	5.0	2.1	2.5	2.3	0	2.7	2.7	2.7	5.0		

REF.NO.	IC2008							
	1	2	3	4	5	6	7	8
MODE								
STOP	0	2.3	0.1	0	2.3	0.1	4.9	5.0
REC	2.5	2.3	2.5	0	2.3	2.5	2.6	5.0
PLAY	2.6	2.3	2.5	0	2.3	2.5	2.5	5.0
CUE	2.6	2.3	2.5	0	2.3	2.5	2.5	5.0
REV	2.5	2.3	2.5	0	2.3	2.5	2.5	5.0
SLOW(1/4)	2.5	2.3	2.5	0	2.3	2.5	2.5	5.0
F.A	2.5	2.3	2.5	0	2.3	2.5	2.5	5.0

REF.NO.	IC2009																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0	5.0	0	0	5.0	0	0	0	0	0	4.9	★	0	5.0						
REC	1.6	3.5	0.2	0.7	5.0	0	0	0	2.5	0	3.4	★	2.5	5.0						
PLAY	1.6	3.5	0.2	0.6	5.0	0	0	0	0.1	0	3.4	★	2.5	5.0						
CUE	1.7	3.4	0.3	0.7	5.0	0	0	0	2.5	0	3.4	★	2.5	5.0						
REV	1.6	3.5	0.2	0.6	4.9	0	0	0	2.5	0	3.4	★	2.5	5.0						
SLOW(1/4)	1.6	3.4	0.3	0.6	5.0	0	0	0	2.5	0	3.4	★	2.5	5.0						
F.A	1.6	3.4	0.2	0.6	5.0	0	0	0	2.5	0	3.4	★	2.5	5.0						



IC6001 MATRIX CHART

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IC6001 MATRIX CHART,
MAIN
VOLTAGE CHART

IC6001 KEY MATRIX

DATA IN	SCAN OUT		
PIN NO.	59 (SCAN 2)	58 (SCAN 1)	
23 (DATA 5)	SAFETY TAB	CASSETTE UP	←
24 (DATA 6)	CASSETTE DOWN	CASSETTE IN	SLP ⑨
25 (DATA 7)			LP/SLP ⑨
26 (DATA 8)	FF/CUE	PLAY	AUDIO DUB ⑩
27 (DATA 9)	REW/REVIEW	REC	COUNTER RESET ⑩
28 (DATA 10)	SLOW/FA	EJECT	MEMORY COUNTER ⑩
29 (DATA 11)	STOP	PAUSE/STILL	POWER ⑩

IC6001 SAFETY DEVICE

SENSOR LED PULSE	DATA IN		
PIN NO.	18 (DATA 1)	19 (DATA 2)	20 (DATA 3)
60("H"LEVEL)	DEW ⑩	REMOTE PAUSE ⑩	CYLINDER LOCK ⑩
60("L"LEVEL)	TAKEUP PHOTO TR ⑩	SUPPLY PHOTO TR ⑩	AUTO STOP ⑩

IC6001 MODE SELECT SWITCH POSITION CODE

DATA IN MODE SELECT SWITCH POSITION	PIN 2 (POSITION 2)	PIN 4 (POSITION 1)	PIN 3 (POSITION 3)
EJECT	L	H	H
STOP	H	L	H
FF/REW	H	L	H
REC/PAUSE	H	L	L
REVIEW	H	L	L
PLAY	L	H	L

REF.NO.	Q6003			Q6004			Q6005			Q6006			Q6007			Q6010		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0	0.1	5.0	0.8	0.5	4.1	0	0.7	0.1	0	0.1	10.2	0	0.1	4.0	5.0	5.0	0.1
FF	0	0.1	0.1	0.8	0.5	4.1	0	0.5	2.6	0	0	10.1	0	0.1	0.1	5.0	5.0	0.2
REW	0	0.1	5.0	0.8	0.5	4.1	0	0.5	2.6	0	0.2	10.3	0	0.2	4.1	5.0	5.0	0.2
REC	0	0.1	5.0	0.8	0.5	4.1	0	★	★	0	0.1	10.2	0	0.2	4.1	5.0	5.0	0.2
PLAY	0	0.1	5.0	0.8	0.5	4.1	0	★	★	0	0.1	10.2	0	0.2	4.0	5.0	5.0	0.1
CUE	0	0	4.9	0.8	0.5	4.1	0	0.4	2.5	0	0.1	10.2	0	0.1	4.0	5.0	4.9	0.1
REV	0	0.1	5.0	0.8	0.5	4.1	0	0.4	★	0	0.1	10.2	0	0.1	4.0	5.0	4.9	0.1
SLOW(1/4)	0	0.1	4.9	0.8	0.5	4.1	0	0.2	4.9	0	0.1	10.2	0	0.1	4.0	5.0	5.0	0.1
F.A	0	0	5.0	0.8	0.5	4.1	0	0.7	4.9	0	0.1	10.2	0	0.2	4.0	5.0	5.0	0.1
REF.NO.	Q6011			Q6012			Q6014			Q6016			Q6020			Q6021		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	5.0	5.0	0.1	5.0	4.9	0.5	0	0	8.2	0	0.1	5.0	5.0	0.1	0.2	5.0	4.9	3.4
FF	5.0	5.0	0.2	5.0	4.9	0.5	0.1	0.1	8.2	0.1	0.1	5.0	5.0	0.1	0.1	5.0	4.5	3.5
REW	5.0	5.0	0.2	5.0	4.9	0.6	0.1	0.1	8.3	0.1	0.1	5.0	5.0	0.1	0.1	5.0	4.5	3.4
REC	5.0	5.0	0.2	5.0	4.9	0.5	0.1	0.1	8.3	0.1	0.1	5.0	5.0	0.1	0.1	5.0	4.5	3.4
PLAY	5.0	5.0	0.2	5.0	4.9	0.6	0.1	0.1	8.3	0.1	0.1	5.0	5.0	0.1	0.1	5.0	4.5	3.4
CUE	5.0	5.0	0.2	5.0	4.9	0.5	0	0.1	8.2	4.3	4.9	5.0	5.0	0.1	0.1	5.0	4.5	3.4
REV	5.0	5.0	0.2	5.0	4.9	0.6	0.1	0.1	8.2	4.3	4.9	5.0	5.0	0.1	0.1	4.9	5.0	4.4
SLOW(1/4)	5.0	5.0	0.2	5.0	4.9	0.5	0.1	0.1	8.3	4.3	4.9	5.0	5.0	0.1	0.1	4.9	4.4	3.4
F.A	5.0	5.0	0.2	5.0	4.9	0.6	0.1	0.1	8.2	4.3	4.9	5.0	5.0	0.1	0.1	4.9	4.4	3.4
REF.NO.	Q6199			Q3201														
MODE	E	B	C	E	B	C												
STOP	5.0	2.5	2.2	0	0.7	0.1												
FF	5.0	2.6	2.3	★	★	★												
REW	5.0	2.6	2.2	★	★	★												
REC	5.0	2.6	2.3	0	0.7	0.1												
PLAY	4.9	2.6	2.3	0	0.1	9.4												
CUE	4.9	4.9	4.5	0	0.1	9.4												
REV	4.9	4.9	4.5	0	0.1	9.4												
SLOW(1/4)	4.9	2.5	2.2	★	★	★												
F.A	5.0	2.6	2.2	★	★	★												

REF.NO.	Q4701			Q4702			Q4703			Q4704			Q4705			Q4706		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	11.3	0.1	0.1	0.1	11.2	0	0	0.2	0.1	0.1	11.2	0.1	0	0.3	0.1	11.2	11.9	12.0
REC	11.3	12.0	12.1	11.3	11.2	0.1	0	0.2	0.1	11.3	11.2	0.1	0	0.5	0.2	11.3	11.9	12.1
PLAY	11.3	12.0	12.1	11.4	11.2	0.1	0	0.2	0.1	11.3	0.3	11.2	0	0.5	0.2	11.3	12.0	12.1
REF.NO.	Q4707																	
MODE	E	B	C															
STOP	4.7	5.3	11.3															
REC	4.7	5.3	11.2															
PLAY	4.8	5.3	11.3															

REF.NO.	TP6001	TP6003	TP6004	TP6005	TP6007	TP6008
MODE						
STOP	3.4	4.1	0.1	4.0	5.0	4.4
FF	3.5	4.1	0.1	4.1	5.0	5.0
REW	3.5	4.1	0.2	4.1	5.0	5.0
REC	3.4	4.1	0.1	3.9	5.0	4.9
PLAY	3.4	4.0	0.1	4.0	5.0	5.0
CUE	3.4	4.0	0.1	4.0	4.9	4.9
REV	3.4	4.0	0.1	4.0	5.0	4.9
SLOW(1/4)	3.4	4.0	0.1	4.0	5.0	4.9
F.A	3.4	4.0	0.1	4.0	5.0	4.9

REF.NO.	TP2001	TP2002	TP2003	TP2004	TP2005	TP2006	TP2007	TP2008	TP2009	TP2010	TP3201
MODE											
STOP	2.2	0.1	0.1	2.5	2.5	2.5	0.6	4.9	1.8	0.1	0.1
REC	0.1	2.1	2.5	2.6	2.4	2.5	0.6	3.9	2.4	2.5	0.1
PLAY	0.1	0.2	2.5	2.6	2.4	2.5	0.6	3.9	1.8	2.5	0.1
CUE	0.1	0.3	2.5	2.5	2.3	2.5	0.6	3.9	1.8	2.5	0.1
REV	4.9	0.2	2.5	2.7	2.4	2.5	0.6	3.8	1.8	2.5	0
SLOW(1/4)	★	0.2	2.5	2.7	2.5	2.5	0.2	3.9	1.8	2.5	★
F.A	★	0.2	2.5	2.7	2.5	2.5	0.2	3.9	1.8	2.5	★

VOLTAGE MEASUREMENT:

1. CUE, REVIEW, FRAME ADVANCE, SLOW.
COLOR BAR SIGNAL IN SLP MODE.
2. OTHERS
COLOR BAR SIGNAL IN SP MODE.

★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

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MAIN
VOLTAGE CHART

REF.NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	4.9	4.9	0	0	0	0	4.9	4.4	4.9	4.9	4.9	4.4	4.9	4.9	2.5	4.0	3.5	2.0
FF	0	0.1	5.0	0.1	0	0	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
REW	0	0.1	0.1	0.1	0	0	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
REC	0	5.0	0.1	0.1	0	0.1	0.1	0	4.9	4.5	0.1	5.0	5.0	4.9	5.0	5.0	2.5	4.0	3.6	3.2
PLAY	0	5.0	0.1	0.1	0	0.1	0.1	0	★	4.5	5.0	5.0	5.0	4.9	4.9	5.0	2.5	4.0	3.6	3.1
CUE	0	4.9	0.1	0.1	0	0.1	0.1	0	★	4.5	5.0	5.0	5.0	4.9	5.0	5.0	2.5	4.0	3.6	3.1
REV	0	0	0.1	4.9	0	0.1	0.1	0	★	4.4	4.9	4.9	5.0	4.9	4.9	4.9	2.5	4.0	3.5	3.1
SLOW(1/4)	0	5.0	0.1	0.1	0	0.1	0.1	0	0.1	4.4	★	5.0	5.0	4.9	5.0	5.0	2.5	4.0	3.6	3.2
F.A	0	5.0	0.1	0.1	0	0.1	0.1	0	4.9	4.4	4.9	5.0	5.0	4.9	5.0	5.0	2.5	4.0	3.5	3.2
REF.NO.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	4.9	0	4.0	0.6	0.6	4.0	4.0	4.0	0.1	5.0	4.9	5.0	4.9	0.1	4.9	0	0	0.1	4.9	4.8
FF	0.1	0	4.1	0.7	0.7	4.0	4.0	4.1	4.2	5.0	5.0	5.0	5.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
REW	0.1	0	4.1	0.7	0.7	4.1	4.1	4.1	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	5.0	4.8
REC	5.0	0	4.0	0.7	0.7	4.0	4.1	4.1	4.2	5.0	5.0	5.0	5.0	0.1	4.9	0.1	4.8	0.1	4.9	4.8
PLAY	5.0	0	4.1	0.7	0.7	4.0	4.0	4.1	4.2	5.0	5.0	5.0	5.0	0.1	0.2	0.1	0.1	0.1	5.0	0.1
CUE	5.0	0	4.0	0.7	0.7	4.1	4.0	4.1	4.1	5.0	5.0	5.0	5.0	0.1	0.2	4.8	0.1	5.0	4.9	0.1
REV	4.9	0	4.4	4.1	0.7	4.0	4.1	4.4	4.1	4.9	4.9	5.0	5.0	0.1	0.2	4.8	0.1	4.9	4.9	0
SLOW(1/4)	5.0	0	4.0	0.7	0.7	4.0	4.0	4.1	4.2	5.0	5.0	5.0	5.0	0.1	0.2	4.8	0.1	0.1	4.9	0.1
F.A	5.0	0	4.1	0.7	0.7	4.0	2.2	4.1	4.2	5.0	5.0	5.0	5.0	0.1	0.2	4.8	0.1	0.1	4.9	0.1
REF.NO.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0.1	0.1	0	0.1	4.8	0.1	0.1	0.1	4.9	0.1	0.1	0.1	0.1	0	0.1	0.1	4.8	4.9	4.9	4.5
FF	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.8	0.2	5.0	0.1	0.1	0.1	0.1	4.8	4.9	4.9	4.5
REW	0.1	0.1	0.1	5.0	4.8	0.1	0.1	0.1	5.0	4.8	0.2	5.0	0.1	0.1	0.1	5.0	4.8	4.9	4.9	4.5
REC	4.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.9	4.9	5.0	0.1	0.1	0.1	0.1	0.1	4.8	4.9	4.9	4.5
PLAY	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.9	4.9	5.0	0.1	0.1	0.1	0.1	0.1	4.9	4.9	4.9	4.5
CUE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.9	4.9	4.9	5.0	0.1	4.9	0.1	0.1	4.9	4.9	4.9	4.5
REV	0.1	0.1	0.1	0.1	4.7	0.1	0.1	0.1	4.9	4.8	4.9	4.9	0.1	4.9	0.1	4.9	0.1	4.9	4.9	4.4
SLOW(1/4)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.7	0.1	0.1	4.9	0.1	0.1	5.0	0.1	0.1	0.1	4.9	4.9	4.5
F.A	0.1	0.1	0.1	0.1	0.1	0.1	0.1	★	0.1	0.1	4.9	0.1	0.1	5.0	0.1	0.1	0.1	4.9	4.9	4.5
REF.NO.	IC6001										IC6004									
MODE	61	62	63	64	1	2	3	4	5	6	7	8	9	10						
STOP	4.8	2.3	2.4	4.9	0	0.6	0.5	8.2	0.1	0.1	14.2	14.2	0.9	0.6						
FF	4.9	2.3	2.4	5.0	0	0.7	0.9	8.3	0.1	0.1	14.2	14.2	1.0	0.7						
REW	4.9	2.3	2.4	5.0	0	0	0.1	0.1	0	0	0.1	0	0	0						
REC	4.9	2.3	2.4	5.0	0	0.7	0.9	8.3	0.1	0.1	14.1	14.1	1.0	0.7						
PLAY	4.8	2.3	2.4	5.0	0	0.7	0.9	8.3	0.1	0.1	14.3	14.3	0.9	0.7						
CUE	4.9	2.3	2.4	5.0	0	0.7	0.9	8.3	0.1	0.1	14.2	14.3	1.0	0.7						
REV	4.8	2.3	2.4	4.9	0	0.6	0.9	8.2	0.1	0.1	14.2	14.2	0.9	0.7						
SLOW(1/4)	4.8	2.3	2.4	5.0	0	0.7	0.9	8.3	0.1	0.1	14.2	14.2	0.9	0.7						
F.A	4.8	2.3	2.4	5.0	0	0.7	0.9	8.2	0.1	0.1	14.2	14.2	0.9	0.7						
REF.NO.	IC6005																			
MODE	1	2	3	4	5	6	7	8	9	10										
STOP	0	0.6	0.9	★	0	0.1	14.2	14.2	0.9	0.6										
FF	0	0.6	1.0	★	0.1	0.1	14.2	14.2	1.0	0.5										
REW	0	0.1	1.0	★	0.1	0.1	14.2	14.2	1.0	0.6										
REC	0	0.6	1.0	★	0.1	0.1	14.1	14.1	1.0	0.6										
PLAY	0	0.6	0.9	★	0.1	0.1	14.3	14.3	1.0	0.6										
CUE	0	0.6	0.9	★	0.1	0.1	14.2	14.3	1.0	0.6										
REV	0	0.6	0.9	★	0.1	0.1	14.2	14.2	0.9	0.6										
SLOW(1/4)	0	0.6	0.9	★	0.1	0.1	14.2	14.2	1.0	0.6										
F.A	0	0.6	0.9	★	0.1	0.1	14.2	14.2	1.0	0.6										
REF.NO.	IC3201										IC4701									
MODE	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8		
STOP	8.4	0.4	8.4	0	0	8.4	0.7	7.6	12.0		5.7	5.7	5.7	0	5.7	5.7	5.7	11.3		
REC	8.4	0.3	8.4	0	0	8.4	0.5	7.6	12.0		5.7	5.7	5.7	0	5.7	5.7	5.7	11.3		
PLAY	8.4	0.3	8.4	0	0	8.4	8.9	7.6	12.1		5.8	5.8	5.7	0	5.7	5.7	5.8	11.3		
CUE	8.4	0.4	8.4	0	0	8.4	8.9	7.6	12.1		★	★	★	★	★	★	★	★		
REV	8.4	0.4	8.4	0	0	8.4	8.9	7.6	12.0		★	★	★	★	★	★	★	★		
REF.NO.	IC4702								IC4703											
MODE	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7					
STOP	5.7	5.7	5.7	0	5.7	5.7	5.7	11.3	7.8	0	7.8	0	4.9	7.0	11.2					
REC	5.7	5.7	5.7	0	5.7	5.7	5.7	11.3	7.9	0	7.8	0	4.9	7.0	11.2					
PLAY	5.7	5.8	5.7	0	5.7	5.8	5.8	11.3	7.9	0	7.8	0	4.9	7.0	11.3					
REF.NO.	IC4704								IC4705											
MODE	1	2	3	4	5	6	7		1	2	3	4	5	6	7	8	9			
STOP	7.8	0	7.8	0	4.9	7.0	11.2		11.2	5.6	5.6	5.6	0	5.6	5.6	5.6	11.2			
REC	7.9	0	7.9	0	4.9	7.1	11.2		11.3	5.6	5.6	5.6	0	5.6	5.6	5.6	11.3			
PLAY	7.9	0	7.9	0	4.9	7.1	11.3		11.3	5.6	5.7	5.6	0	5.6	5.6	5.6	11.3			

VOLTAGE MEASUREMENT:

1. CUE, REVIEW, FRAME ADVANCE, SLOW.
COLOR BAR SIGNAL IN SLP MODE.

2. OTHERS
COLOR BAR SIGNAL IN SP MODE.

★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

P2001

1	ROTARY SW
2	VSS
3	PICTURE CTL
4	HEAD SW
5	3.58MHz
6	PB ⑥
7	DELAY REC ⑥
8	CUE/REVIEW/SS ⑥
9	SLP ⑥
10	LP/SLP ⑥
11	EE/VV(EE ⑥)
12	EXCEPT PB ⑥

P2002

1	V-PULSE
2	V-LOCK
3	ENV DET
4	HEAD SW

P2003

1	CONTROL HEAD
2	GND

P2004

1	GND
2	VH+
3	HEM
4	HEM
5	HES
6	HES
7	MAIN COIL 3
8	MAIN COIL 2
9	+14V
10	MAIN COIL 1

P2005

1	CAP ⑥ FG
2	GND

P2006

1	ERROR
2	FWD ⑥/STOP ⑥/REV ⑥
3	CUE/REVIEW/SS ⑥
4	REF VOLTAGE
5	+5V
6	VM
7	GND
8	TL

P3201

1	GND
2	VIDEO
3	GND
4	VIDEO
5	GND
6	VIDEO
7	AUDIO
8	GND

P4701

1	HEADPHONE L CH
2	HEADPHONE R CH
3	GND
4	AUDIO L CH
5	GND
6	AUDIO R CH

P4702

1	AUDIO R CH
2	GND
3	AUDIO L CH

P6001

1	DEW SENSOR
2	SENSOR LED PULSE
3	REEL LED
4	REEL SENSOR
5	POSITION 1
6	POSITION 3
7	POSITION 2
8	
9	SAFETY TAB SW
10	GND
11	UNSWITCH +12V

P6002

1	SERIAL CLOCK
2	349KHz
3	SERIAL DATA
4	TV/VCR SW

P6003

1	DATA 10
2	DATA 9
3	DATA 8
4	VIDEO INPUT SELECT
5	AUDIO INPUT SELECT
6	AUDIO ⑥

P6005

1	LOADING ⑥ UNLOADING ⑥
2	LOADING ⑥ LOADING ⑥

P6006

1	CASSETTE LOAD ⑥ LOAD ⑥
2	CASSETTE LOAD ⑥ UNLOAD ⑥
3	SUPPLY PHOTO TR
4	GND
5	CASSETTE IN SW
6	CASSETTE UP/DOWN SW
7	TAKEUP PHOTO TR

P6007

1	IR DATA 3
2	IR DATA 0
3	IR DATA 1
4	IR DATA 2
5	IR POWER ON ⑥
6	GND
7	TIMER SET ⑥
8	TIMER REC ⑥
9	SAFETY TAB SW
10	

P6008

1	GND
2	TV/VCR SW
3	POWER SW
4	SCAN 1
5	SCAN 2
6	DATA 11
7	DATA 10
8	DATA 9
9	DATA 8

P6009

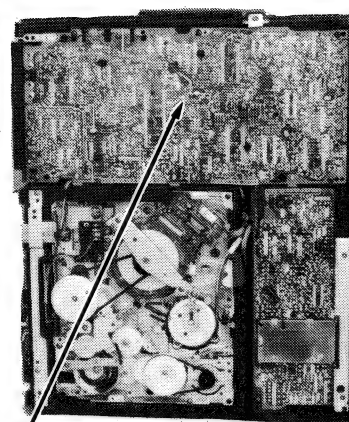
1	UNSWITCH +12V
2	GND
3	+5V
4	+14V
5	+12V
6	POWER ON ⑥
7	GND

P6010

1	AUDIO MUTE ⑥
2	AUDIO DELAY REC ⑥
3	
4	SLP ⑥
5	LP/SLP ⑥
6	AUDIO EE ⑥

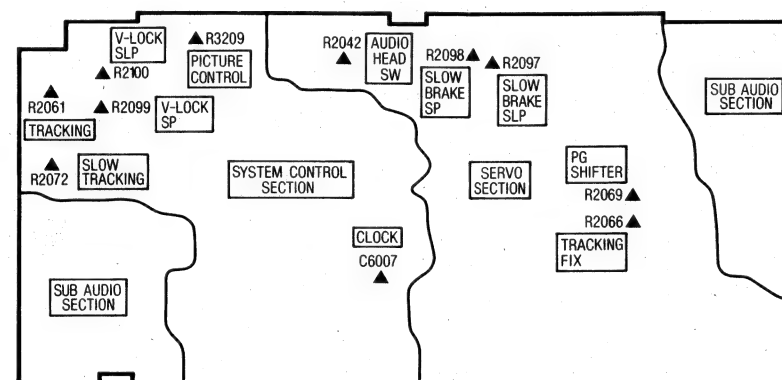
P6011

1	EE/VV(EE ⑥)
2	EXCEPT PB ⑥
3	AUDIO HEAD SW
4	+5V
5	UNSWITCH +12V
6	SPEED MEMORY ⑥

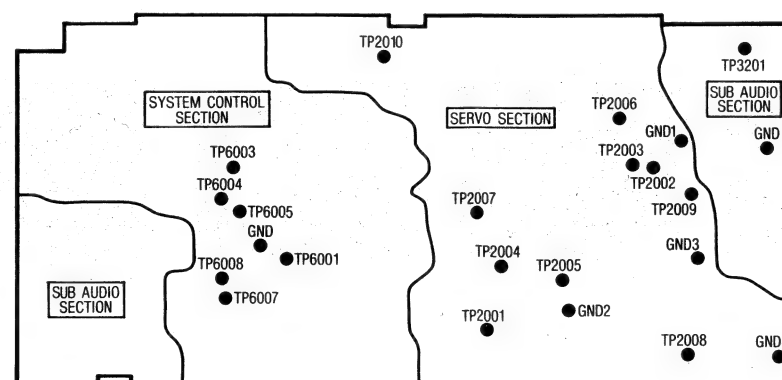


MAIN C.B.A. (SERVO/SYSTEM CONTROL SUB AUDIO)

LOCATION OF ADJUSTMENT POINTS




LOCATION OF TEST POINTS



STEM CONTROL/SUB AUDIO) VEPS0251B1

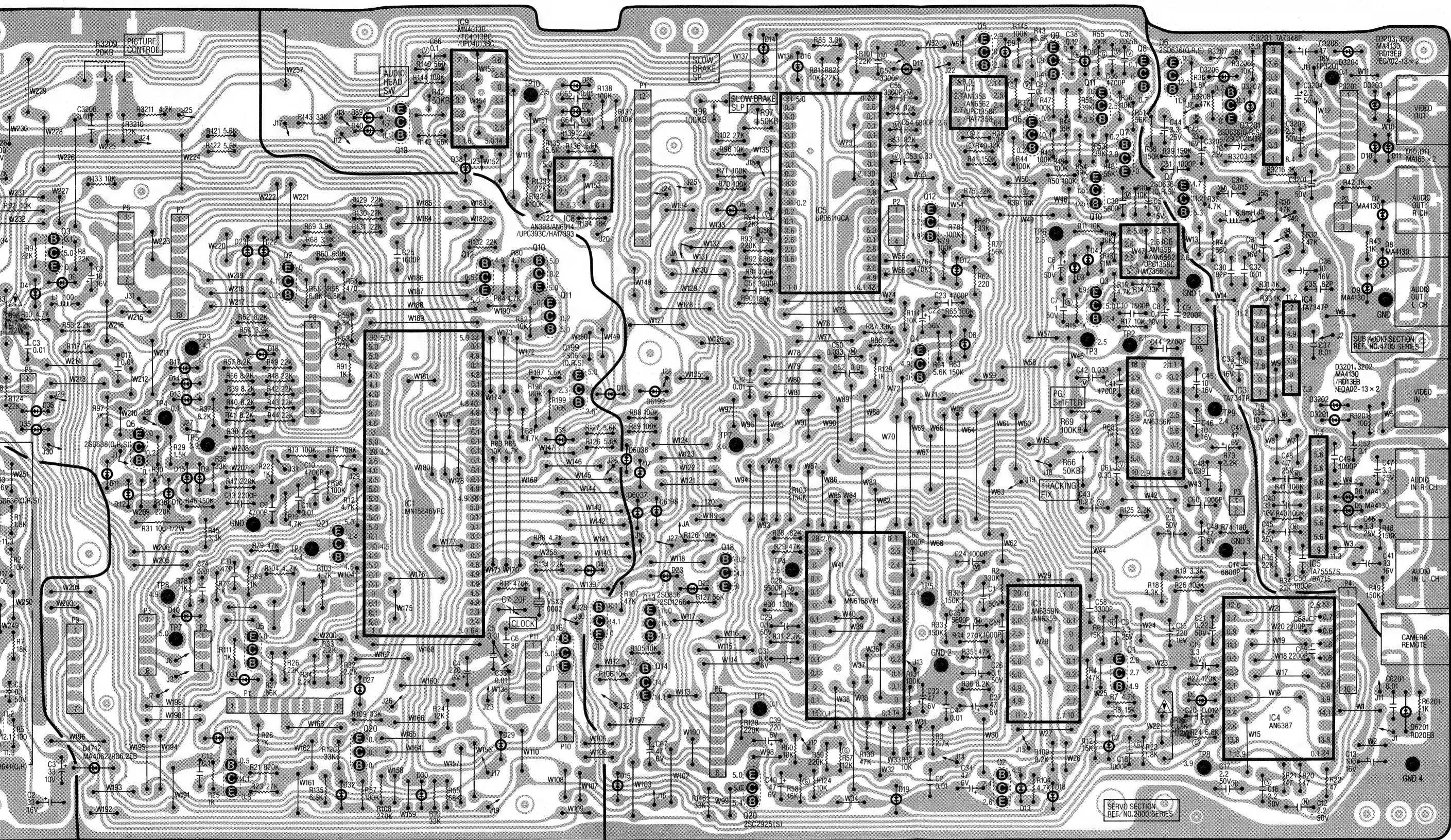
CONTROL SECTION
INPUT: COLOR BAR SIGNAL
IN SP REC MODE.

SUB AUDIO SECTION
VOLTAGE MEASUREMENT: MONOSCOPE SIGNAL
IN SP REC MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

4-5
MAIN C.B.A.
(SERVO/SYSTEM CONTROL
/SUB AUDIO)



SERVO SECTION	
Q1	7-A
Q2	7-A
Q3	7-C
Q4	6-C
Q5	7-D
Q6	7-D
Q7	7-D
Q8	7-D
Q9	7-D
Q10	7-D
Q11	7-D
Q12	6-C
Q13	5-B
Q14	5-A
Q15	5-B
Q18	5-B
Q19	4-D
Q20	6-A

SYSTEM CONTROL SECTION	
Q3	2-C
Q4	3-A
Q5	3-A
Q6	3-B
Q7	3-C
Q10	4-C
Q11	5-C
Q12	4-C
Q14	2-D
Q16	5-A
Q20	4-A
Q21	3-B
Q119	5-C

SUB AUDIO SECTION	
Q1	2-B
Q2	2-A
Q3	1-A
Q4	2-B
Q5	1-B
Q6	7-D
Q7	7-C
Q3201	8-D

Q2001, Q2002, Q2005,
Q2006, Q2012, Q2014,
Q6010, Q6011, Q6012, Q6021
2S8641(Q,R,S)/2S4937M(R) x10

UNLESS OTHERWISE SPECIFIED:
TRANSISTORS ARE 2SD636(Q,R,S),
DIODES ARE MA165/1SS119 AND
WATTAGE OF RESISTORS ARE 1/4W.

VJS0251①

4-6
NORMAL AUDIO
C.B.A.

NORMAL AUDIO C.B.A. VEPS0422B1

REF.NO.	Q4001			Q4002			Q4003			Q4004			Q4007			Q4008		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	10.5	11.3		0	0	0.2	0	0	0	0	0	0	0	4.6	0	0	0	11.8
REC	10.6	11.3	11.8	0	-1.0	11.6	0	0	0	0	0	0	0	4.6	0	0	0	0
PLAY	10.5	11.2	11.8	0	0.3	0.3	0	0	0	0	0	0	0	0	5.6	0	0	11.8
REF.NO.	Q4009			Q4011			Q4012			Q4013			Q4014			Q4015		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	11.8	11.8	0.4	0	0	4.4	0	0	0	0	0	0	0	0	0	0	0	10.5
REC	11.8	0	11.8	0	0	4.4	0	0	0	0	0	0	0	2.3	0	0	0	10.5
PLAY	11.9	11.8	0.3	0	5.6	0	0	0	0	0	0	0	0	0	5.6	0	0	10.4
REF.NO.	Q4016			Q4017			Q4018			Q4019			Q4020					
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C			
STOP	10.5	10.5	0	10.5	10.5	0	0	0	10.6	0	0	10.5	10.5	10.4	0			
REC	10.5	10.5	0	10.5	10.5	0	0	0	10.5	0	0	10.5	10.5	10.4	0			
PLAY	10.4	10.4	0	10.5	10.4	0	0	0	10.5	0	0	10.4	10.4	10.4	0			

REF.NO.	IC4001																		
MODE	1	2	3	4	5	6	7												
STOP	0	0	0	0	4.4	10.6	0												
REC	0	0	0	0	0	10.6	0												
PLAY	0	0	0	0	0	10.5	5.6												

REF.NO.	IC4002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.0	5.1	5.2	5.5	5.6	5.6	★	5.5	5.6	5.5	0	0	10.6	5.6	5.5	5.6	5.6	★	0	4.5
REC	5.0	5.1	5.1	5.6	5.6	5.6	★	5.5	5.6	5.6	0	0	10.6	5.5	5.6	5.6	5.5	★	0	0
PLAY	5.0	5.1	5.3	5.5	5.5	5.5	★	5.5	5.5	5.4	0	0	10.5	5.5	5.5	5.5	5.5	★	0	0
REF.NO.	IC4002				IC4003															
MODE	21	22	23	24	1	2	3	4	5	6	7	8	9							
STOP	5.5	5.4	★	★	0	0	0	0	0	0	0	0	0							
REC	5.5	5.4	★	★	0	0	0	0	0	0	0	0	0							
PLAY	5.5	5.4	★	★	0	0	0	0	0	0	0	0	0							

REF.NO.	IC4004																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
STOP	5.8	0.7	0.7	5.4	5.4	5.0	5.4	5.4	0	5.4	0	5.0	5.4	5.5	0.7	0.7	10.6	5.8		
REC	5.8	0.7	0.7	5.4	5.4	5.0	5.4	5.4	0	5.4	0	5.0	5.4	5.5	0.7	0.7	10.6	5.8		
PLAY	5.8	0.7	0.7	5.4	5.3	5.0	5.4	5.4	0	5.4	0	5.0	5.3	5.4	0.7	0.7	10.5	5.7		

REF.NO.	IC4005																		
MODE	1	2	3	4	5	6	7												
STOP	0	0	0	0	0	10.6	0												
REC	0	0	0	0	0	10.6	0												
PLAY	0	0	0	0	0	10.5	5.6												

REF.NO.	IC4006																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.1	5.2	5.4	5.6	5.6	5.6	★	5.6	5.6	5.6	0	0	10.6	5.6	5.6	5.6	5.6	★	0	4.5
REC	5.1	5.1	5.4	5.5	5.5	5.5	★	5.5	5.5	5.5	0	0	10.6	5.5	5.5	5.5	5.5	★	0	4.4
PLAY	5.1	5.1	5.4	5.5	5.5	5.5	★	5.5	5.5	5.5	0	0	10.5	5.5	5.5	5.5	5.5	★	0	0
REF.NO.	IC4006				IC4007															
MODE	21	22	23	24	1	2	3	4	5	6	7	8	9							
STOP	5.4	5.4	★	★	0	0	0	0	0	0	0	0	0							
REC	5.4	5.4	★	★	0	0	0	0	0	0	0	0	0							
PLAY	5.4	5.4	★	★	0	0	0	0	0	0	0	0	0							

REF.NO.	TP4001	TP4002	TP4003	TP4004																
MODE																				
STOP	0	0	0	0																
REC	0	0	0	0																
PLAY	0	0	0	0																

VOLTAGE MEASUREMENT:
MONOSCOPE SIGNAL IN SP MODE.
★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

P4001

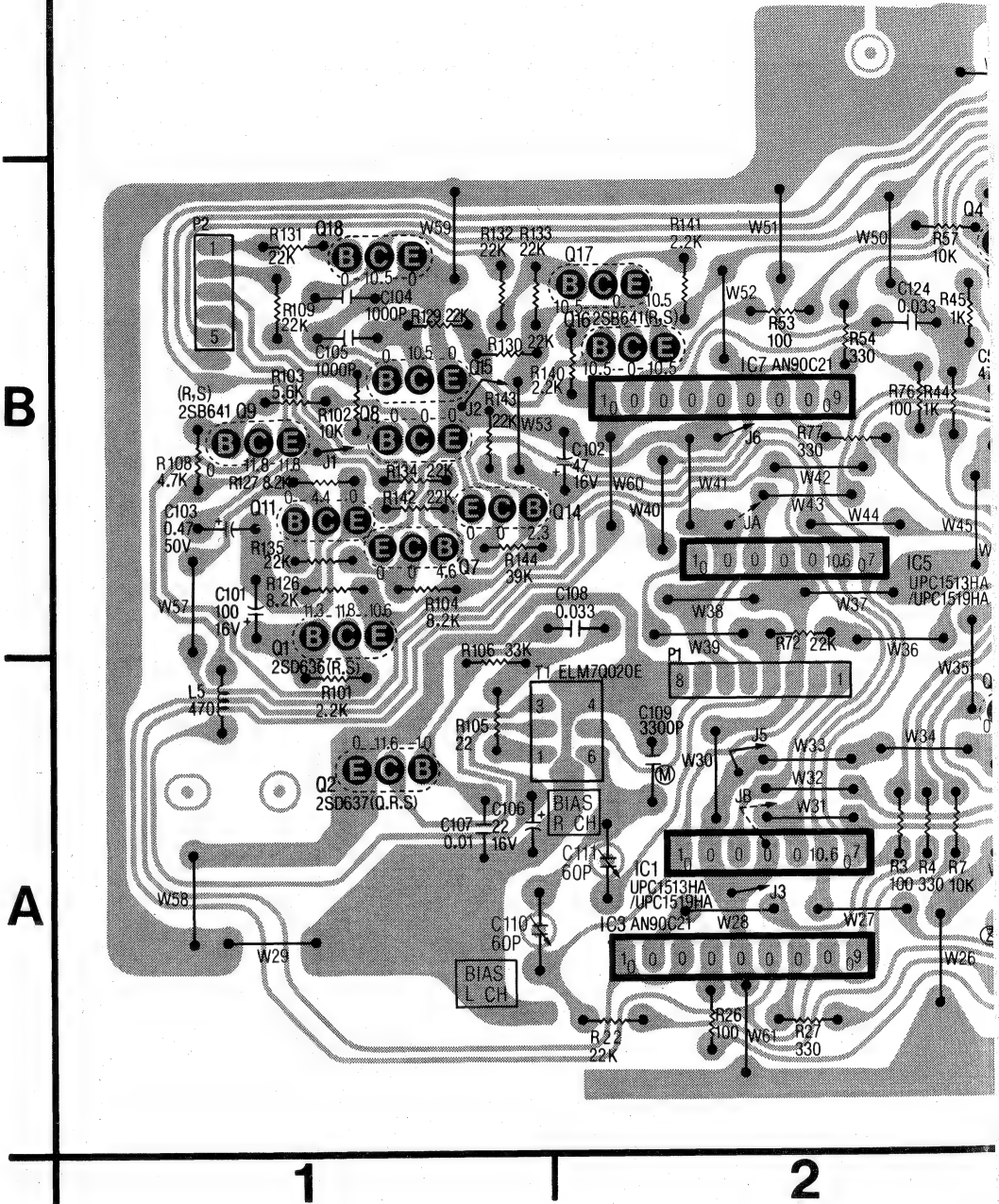
1	NORMAL AUDIO HEAD L CH
2	NORMAL AUDIO HEAD L CH
3	GND
4	NORMAL AUDIO HEAD R CH
5	NORMAL AUDIO HEAD R CH
6	GND
7	AUDIO ERASE HEAD
8	GND

P4002

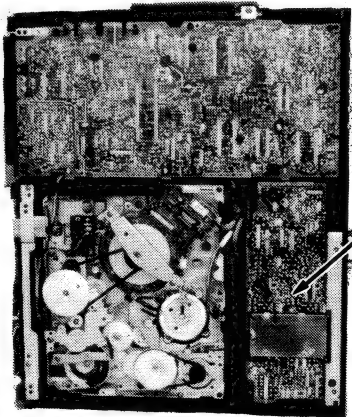
1	SLP (H)
2	LP/SLP (H)
3	AUDIO DELAY REC (H)
4	AUDIO EE (H)
5	AUDIO MUTE (H)

P4006

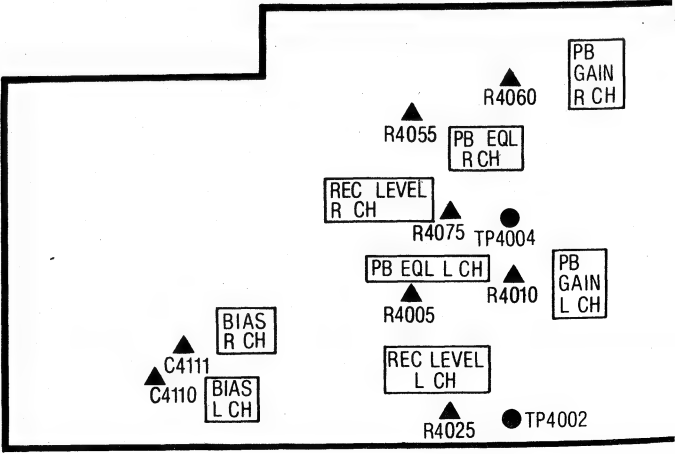
1	+12V
2	DOLBY ON (H)
3	AUDIO MUTE (H)
4	NORMAL AUDIO R CH
5	NORMAL AUDIO L CH
6	GND
7	NORMAL AUDIO L CH
8	GND
9	NORMAL AUDIO R CH
10	GND
11	AUDIO EE (H)



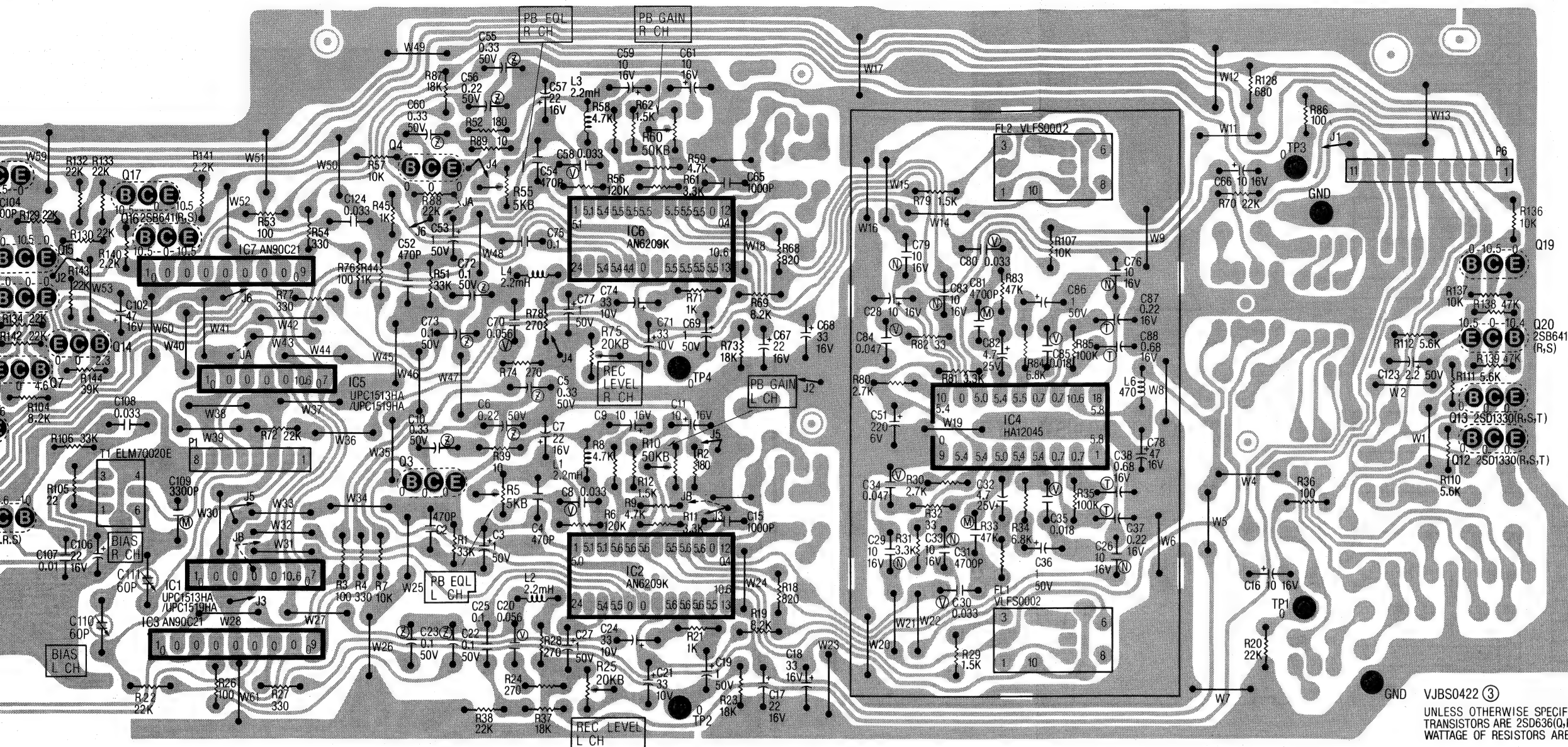
LOCATION OF TEST POINTS & ADJUST



NORMAL AUDIO C.B.A.

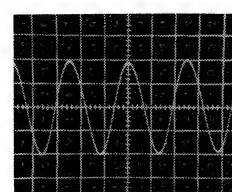
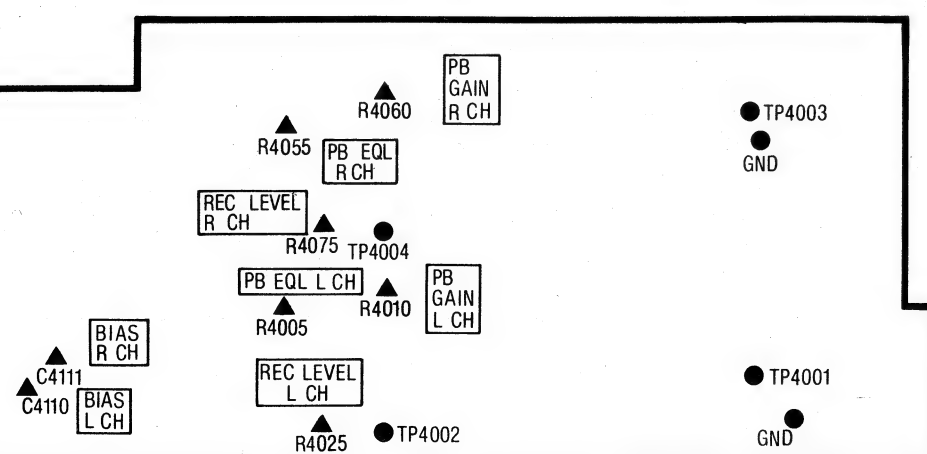


SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

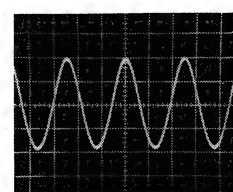


NORMAL AUDIO C.B.A.	
Q1	1-B
Q2	1-A
Q3	2-A
Q4	2-B
Q7	1-B
Q8	1-B
Q9	1-B
Q11	1-B
Q12	6-B
Q13	6-B
Q14	1-B
Q15	1-B
Q16	2-B
Q17	2-B
Q18	1-B
Q19	6-B
Q20	6-B

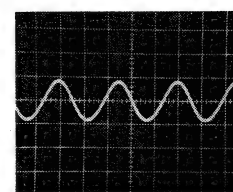
LOCATION OF TEST POINTS & ADJUSTMENT POINTS



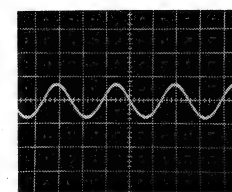
IC4004 (1) PB.S.P.L.P.SLP.
0.2V/1msec. div.



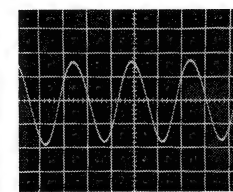
IC4004 (2) REC.S.P.L.P.SLP.
0.2V/1msec. div.



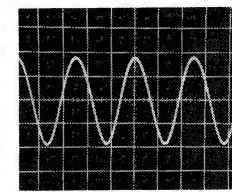
IC4004 (3) PB.S.P.L.P.SLP.
20mV/1msec. div.



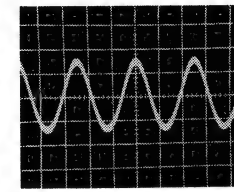
IC4004 (4) REC.S.P.L.P.SLP.
20mV/1msec. div.



TP4001 PB.S.P.L.P.SLP.
0.2V/1msec. div.



TP4001 REC.S.P.L.P.SLP.
0.2V/1msec. div.



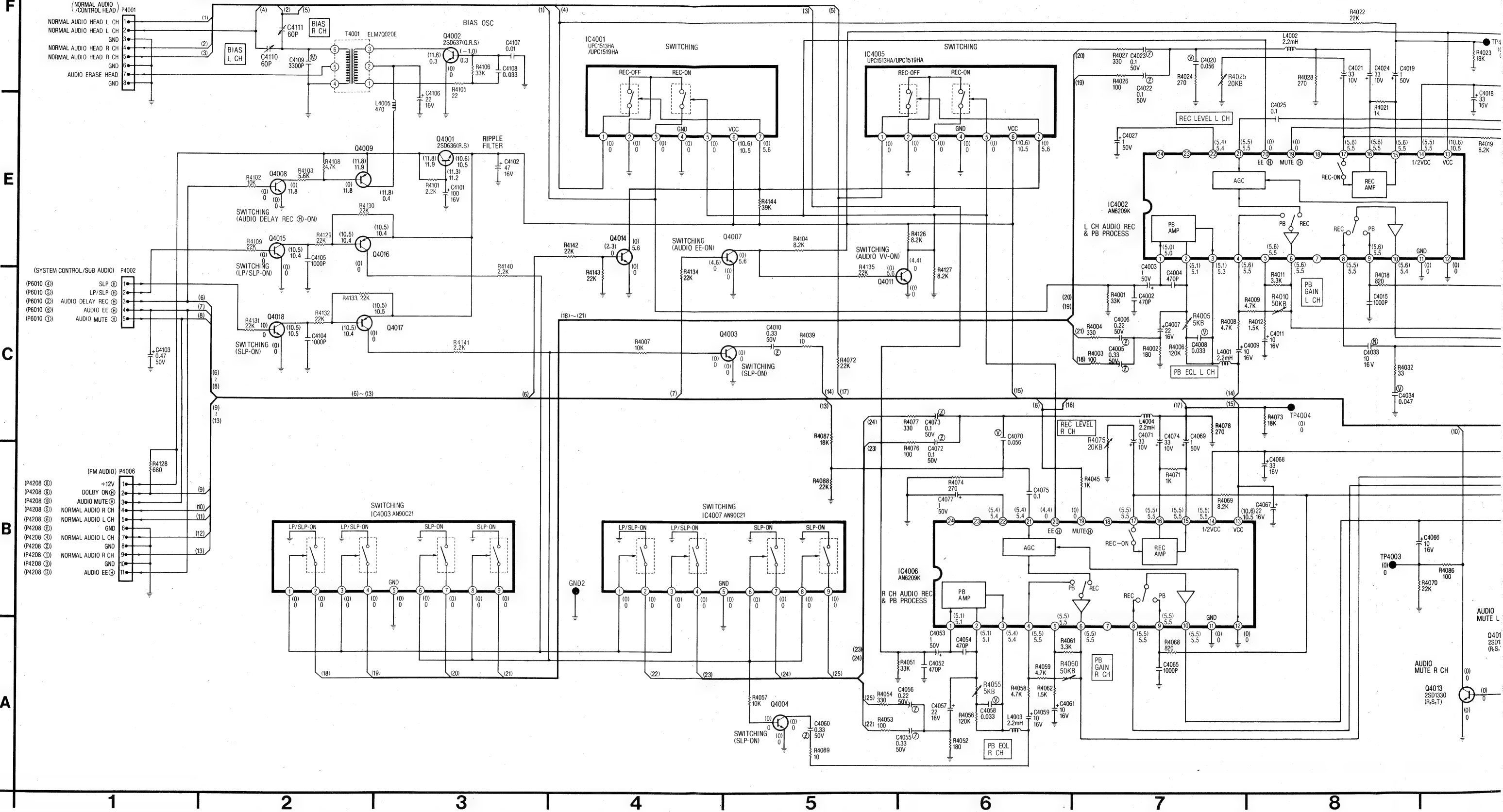
TP4002 REC.S.P.L.P.SLP.
0.2V/1msec. div.

NORMAL AUDIO SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

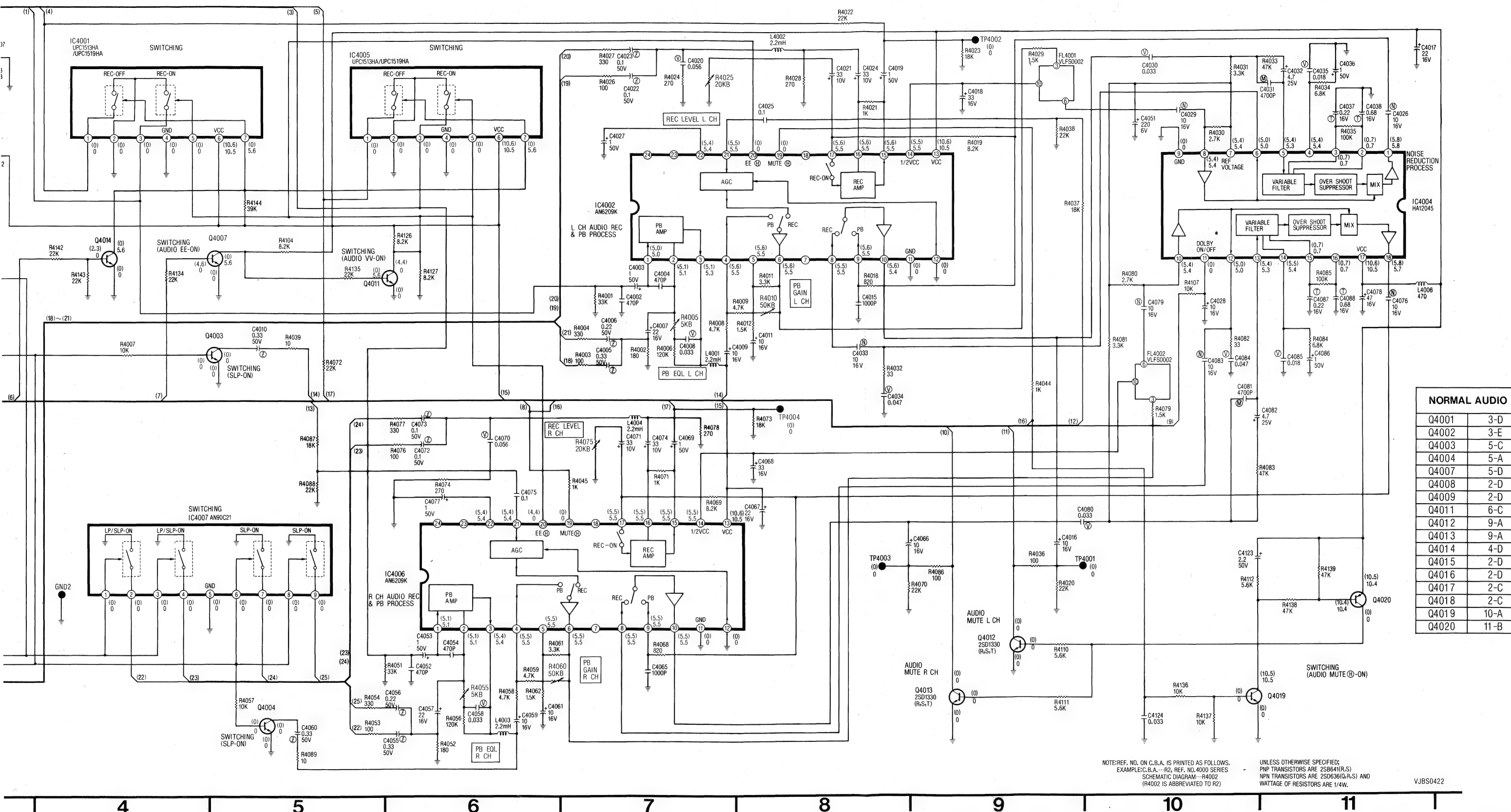
VOLTAGE MEASUREMENT:
MONOSCOPE SIGNAL IN SP REC MODE WITH BRACKET.
MONOSCOPE SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER
ELECTROSTATICALLY SENSITIVE AND THEREFORE
HANDLING TECHNIQUES DESCRIBED UNDER THE
(ES) DEVICES" SECTION OF THIS SERVICE MA



VOLTAGE MEASUREMENT:
MONOSCOPE SIGNAL IN SP REC MODE WITH BRACKET.
MONOSCOPE SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



VJB50422

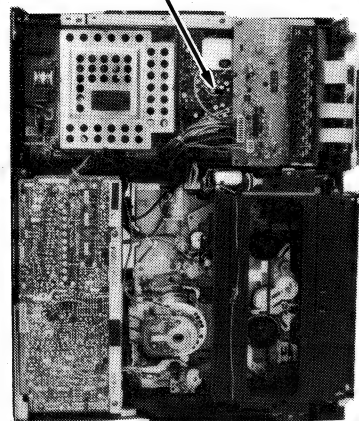
FM AUDIO C.B.A. VEPS0424B1

IMPORTANT SAFETY NOTICE;
COMPONENTS IDENTIFIED BY TH
SPECIAL CHARACTERISTICS IMP
WHEN REPLACING ANY OF THES
ONLY THE SPECIFIED PARTS.

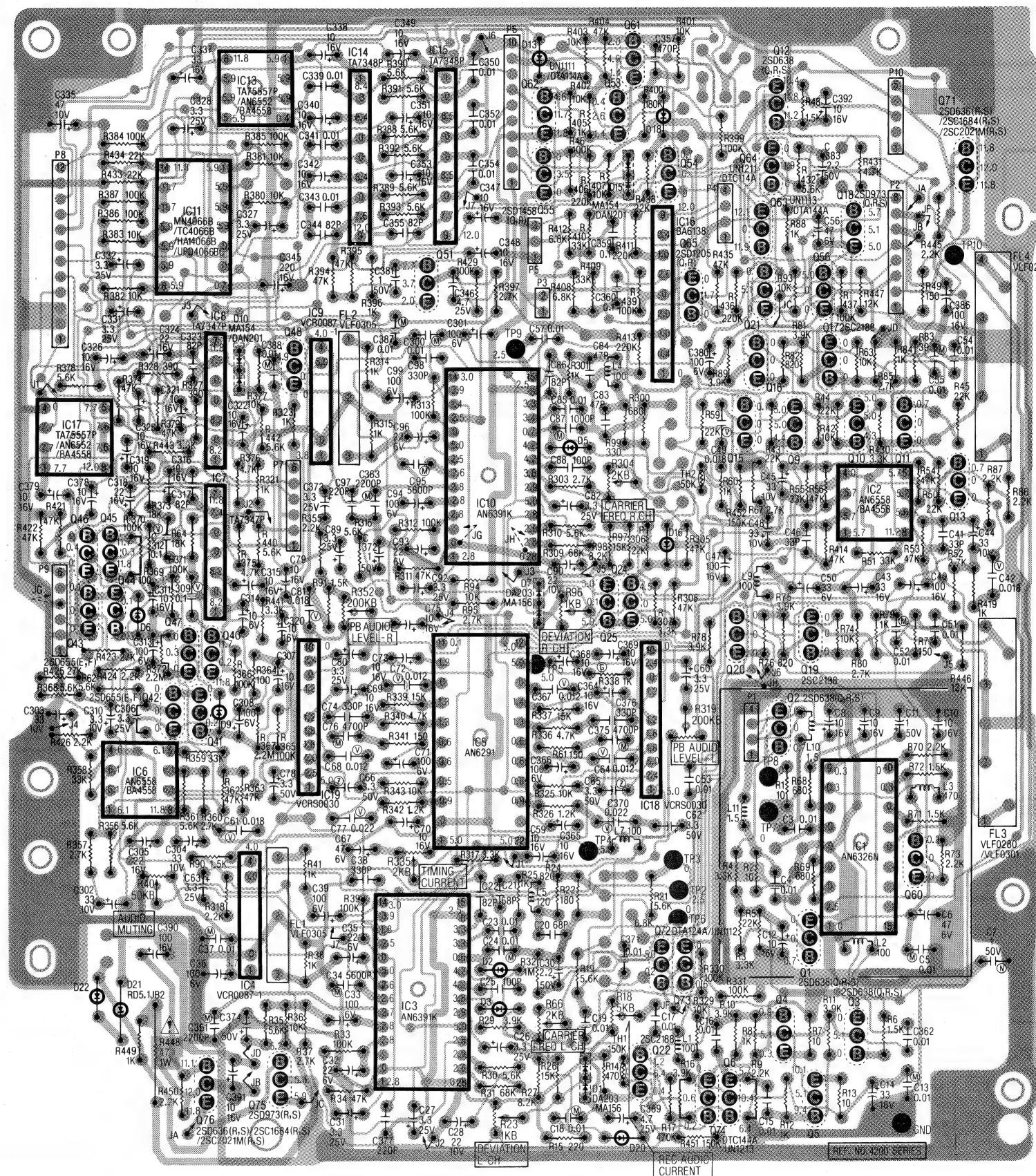
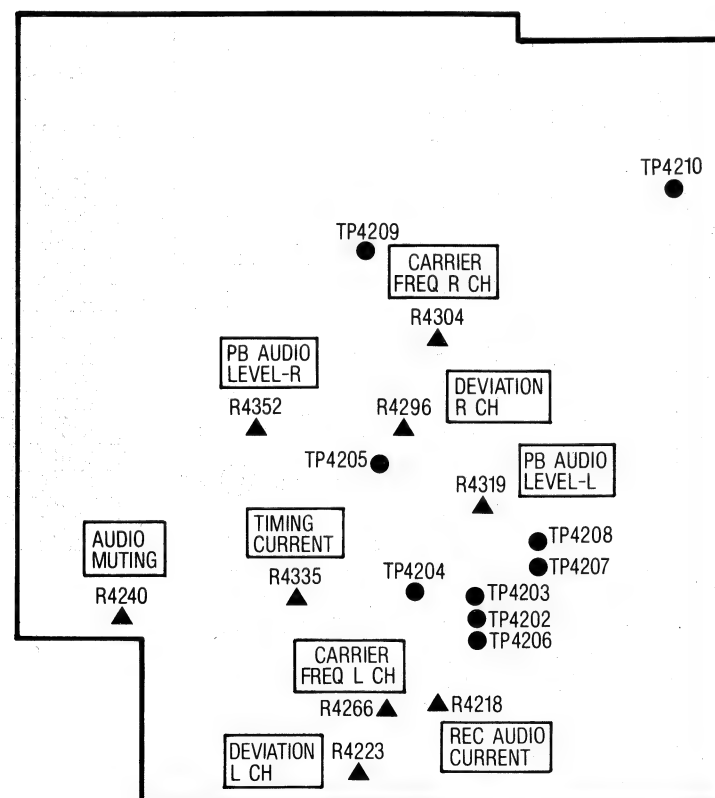
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND
ELECTROSTATICALLY SENSITIVE
HANDLING TECHNIQUES DESCRIBED
(ES) DEVICES" SECTION OF THIS

VOLTAGE MEASUREMENT : MONO IN :

FM AUDIO C.B.A.



LOCATION OF TEST POINTS & ADJUSTMENT POINTS



Q5, Q9, Q10, Q16, Q20, Q24, Q25, Q40, Q45
2SB641(Q, R, S) / 2SA564(R, S) × 9


Q4,Q6,Q11,Q13,Q15,Q21,Q41,
Q44,Q51,Q53,Q54,Q60,Q61,Q73
2SD636(Q,R,S)/2SC1684(Q,R,S)
/2SC2021M(Q,R,S) × 14

UNLESS OTHERWISE SPECIFIED;
TRANSISTORS ARE UN1212/DTC124A,
DIODES ARE MA165/1SS119 AND
WATTAGE OF RESISTORS ARE 1/4W.

VJBS0424 (1)

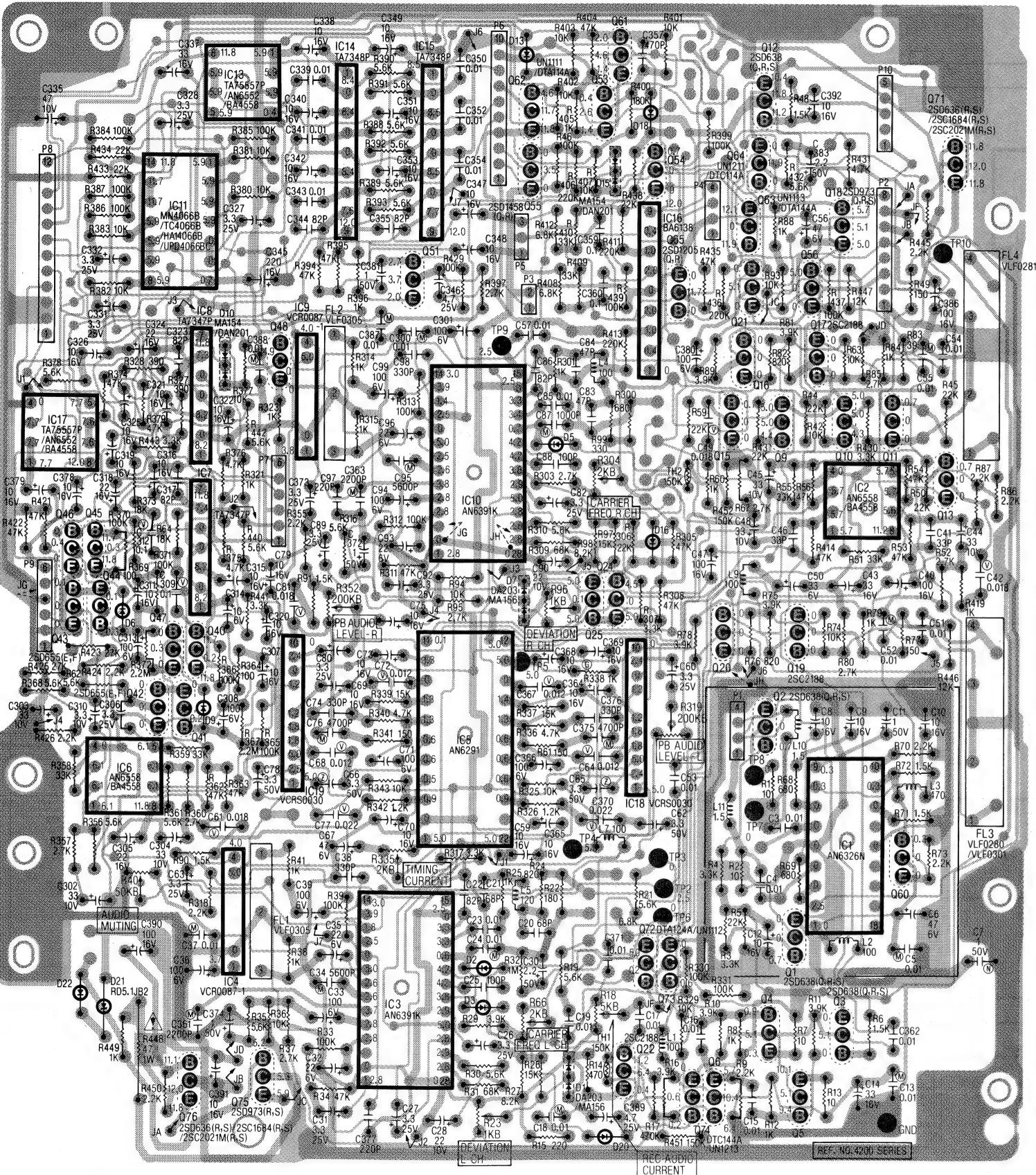
FM AUDIO C.E	
Q1	3-
Q2	3-
Q3	4-
Q4	3-
Q5	3-
Q6	3-
Q9	3-
Q10	4-
Q11	4-
Q12	3-
Q13	4-
Q15	3-
Q16	3-
Q17	3-
Q18	4-
Q19	3-
Q20	3-
Q21	3-
Q22	3-
Q24	3-
Q25	3-
Q40	1-
Q41	1-
Q42	1-
Q43	1-
Q44	1-
Q45	1-
Q46	1-
Q47	1-
Q48	2-
Q51	2-
Q53	3-
Q54	3-
Q55	3-
Q56	3-
Q60	4-
Q61	3-
Q62	3-
Q63	3-
Q64	3-
Q65	3-
Q71	4-
Q72	3-
Q73	3-
Q74	3-
Q75	1-
Q76	1-

FM AUDIO C.B.A. VEPS0424B1

IMPORTANT SAFETY NOTICE;
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

VOLTAGE MEASUREMENT : MONOSCOPE SIGNAL
IN SP REC MODE.



FM AUDIO C.B.A.	
Q1	3-A
Q2	3-B
Q3	4-A
Q4	3-A
Q5	3-A
Q6	3-A
Q9	3-C
Q10	4-C
Q11	4-C
Q12	3-D
Q13	4-C
Q15	3-C
Q16	3-C
Q17	3-C
Q18	4-D
Q19	3-B
Q20	3-B
Q21	3-D
Q22	3-A
Q24	3-C
Q25	3-C
Q40	1-B
Q41	1-B
Q42	1-B
Q43	1-B
Q44	1-B
Q45	1-C
Q46	1-C
Q47	1-B
Q48	2-C
Q51	2-D
Q53	3-D
Q54	3-D
Q55	3-D
Q56	3-D
Q60	4-B
Q61	3-D
Q62	3-D
Q63	3-D
Q64	3-D
Q65	3-D
Q71	4-D
Q72	3-A
Q73	3-A
Q74	3-A
Q75	1-A
Q76	1-A

1	FM AUDIO HEAD R CH
2	FM AUDIO HEAD L CH
3	FM AUDIO HEAD R/L CH
4	GND

1	GND
2	EE/VV (EE Ⓡ)
3	+5V
4	EXCEPT PB Ⓡ
5	AUDIO HEAD SW
6	UNSWITCH +12V
7	SPEED MEMORY Ⓛ
8	

1	AUDIO
2	GND

1	LEVEL METER L CH
2	GND
3	LEVEL METER R CH
4	DOLBY ON (H)

1	AUDIO R CH
2	GND
3	AUDIO L CH

P4206	
1	+5V
2	AUDIO MIX (H)
3	NORMAL AUDIO (L)
4	SWITCHED +12V
5	AGC ON (L)
6	AUDIO R CH (H)
7	FM LED ON (H)
8	AUDIO L CH (H)
9	FM AUDIO (H)
10	GND

1	GND
2	AUDIO GAIN L CH
3	GND
4	AUDIO GAIN L CH
5	AUDIO GAIN R CH
6	AUDIO GAIN R CH

1	NORMAL AUDIO R CH
2	GND
3	GND
4	NORMAL AUDIO L CH
5	NORMAL AUDIO R CH
6	NORMAL AUDIO L CH
7	VIDEO EE (H)
8	+12V
9	DOLBY ON (H)
10	AUDIO MUTE (H)
11	GND
12	AUDIO EE (H)

1	AUDIO R CH
2	GND
3	AUDIO L CH
4	GND
5	HEADPHONE L CH
6	HEADPHONE R CH

1	VIDEO EE (H)
2	
3	DELAY REC (H)
4	+12V
5	GND

4-9
FM AUDIO
VOLTAGE CHART

REF.NO.	Q4201			Q4202			Q4203			Q4204			Q4205			Q4206		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0
REC	0	0.7	0	0	0.7	0	0	0	5.1	0.3	0.9	5.1	10.1	9.4	5.1	5.7	6.4	10.4
PLAY	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0
REF.NO.	Q4209			Q4210			Q4211			Q4212			Q4213			Q4215		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	5.0	4.4	5.0	5.0	4.3	5.0	0	0.7	0	0	0	11.9	0	0.7	0	0	0.6	0
REC	5.0	4.4	5.0	5.0	4.3	5.0	0	0.7	0	10.4	11.2	11.8	0	0.7	0	0	0.7	0
PLAY	5.0	5.0	0.1	5.0	5.0	0	0	0	5.0	0	0	11.9	0	0	0	0	0	0
REF.NO.	Q4216			Q4217			Q4218			Q4219			Q4220			Q4221		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	4.2	3.6	2.9	0.3	1.0	3.6	5.0	5.7	5.0	0.3	1.0	3.7	4.3	3.7	2.6	5.0	5.7	5.1
REC	0	0	0	0	0	0	5.0	5.7	5.1	0	0	0	0	0	0	0	0	5.1
PLAY	0	3.6	2.9	0.3	1.0	3.6	5.0	5.7	5.0	0.3	1.0	3.7	4.3	3.7	2.6	5.0	5.7	5.0
REF.NO.	Q4222			Q4224			Q4225			Q4240			Q4241			Q4242		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0	0	0	4.9	4.4	0	5.0	4.9	0.2	11.9	11.8	0	0	0	0.2	0	0	0
REC	0.4	1.2	6.4	5.0	4.5	0	5.0	5.0	0.1	11.8	11.7	0.2	0	0.2	0.3	0	0	0
PLAY	0	0	0	4.3	3.6	4.2	5.0	4.3	5.0	11.9	11.8	0	0	0	0.2	0	0	0
REF.NO.	Q4243			Q4244			Q4245			Q4246			Q4247			Q4248		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0	0.1	0	0.3	0.6	0.5	11.9	11.8	0.5	0	0	0.5	0	0	0.3	0	4.9	0
REC	0	0.1	0	0.1	0.3	0.3	11.8	11.7	0.3	0	0	0.4	0	0	0.3	0	4.9	0
PLAY	0	0	0	0	0.1	0.2	11.9	11.8	0.1	0	6.0	0	0	6.0	0	0	0	6.5
REF.NO.	Q4251			Q4253			Q4254			Q4255			Q4256			Q4260		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	2.1	2.7	3.7	1.4	0.4	2.6	0	0.7	0	0	0	3.5	0	0	5.7	2.5	3.1	4.9
REC	2.0	2.7	3.7	1.4	0.4	2.6	0	0.7	0	0	0	3.5	0	5.0	0	0	0.3	0
PLAY	2.1	2.7	3.7	1.4	0.4	2.6	0	0.7	0	0	0	3.5	0	0	5.7	2.5	3.1	4.9
REF.NO.	Q4261			Q4262			Q4263			Q4264			Q4265			Q4271		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	1.4	2.1	4.6	11.9	4.6	11.8	12.0	11.9	0	0	0	11.9	0	0	11.8	11.9	11.8	12.0
REC	1.4	2.0	4.6	11.8	4.6	11.7	12.1	11.9	0	0	0	11.9	0	0	11.7	11.8	11.8	12.0
PLAY	1.4	2.0	4.6	11.9	4.6	11.8	12.0	12.0	0	0	0	11.9	0	0	11.8	11.9	11.8	12.0
REF.NO.	Q4272			Q4273			Q4274			Q4275			Q4276					
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C			
STOP	5.0	★	0.2	0	0.6	★	0	0.2	0.6	5.2	5.9	5.3	11.1	11.8	12.0			
REC	5.0	★	0.2	0	0.6	★	0	0.2	0.6	5.2	5.9	5.3	11.1	11.8	12.0			
PLAY	5.0	★	0.2	0	0.7	★	0	0.2	0.6	5.2	5.9	5.3	11.1	11.8	12.0			

REF.NO.	IC4201																	
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STOP	4.9	0	0.9	0.7	0	0.7	0.9	3.1	3.2	2.8	3.1	1.7	★	0	★	★	★	★
REC	0	2.5	0	0	0	0	0	0.3	0.3	0	0.3	0	★	0	★	★	★	★
PLAY	4.9	2.5	0.9	0.7	0	0.7	0.9	3.1	3.2	2.8	3.1	1.7	★	0	★	★	★	★

REF.NO.	IC4202							
MODE	1	2	3	4	5	6	7	8
STOP	5.7	5.8	5.8	0	5.8	5.8	5.7	11.3
REC	5.7	5.7	5.7	0	5.7	5.7	5.6	11.2
PLAY	5.7	5.8	5.8	0	5.8	5.8	5.7	11.3

REF.NO.	IC4203																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	2.8	0	★	2.8	2.8	3.7	2.6	2.5	5.0	0	0	1.8	3.9	3.0	2.5	0	3.3	3.3	0.6	4.2
REC	2.8	0	★	2.8	2.8	3.7	2.6	2.6	5.0	0	2.5	1.8	3.9	3.0	2.5	0	3.3	3.3	0.6	4.2
PLAY	2.8	0	★	2.8	2.8	2.2	2.3	2.2	4.9	0	2.5	1.8	3.4	2.4	2.5	0	3.1	3.7	0.7	4.1

REF.NO. MODE	IC4203								IC4204											
	21	22	23	24	25	26	27	28	1	2	3	4								
STOP	4.2	3.8	2.9	5.0	2.8	2.9	2.8	0	3.7	0	5.0	4.0								
REC	4.2	3.8	2.9	5.0	2.8	2.9	2.8	0	3.7	0	5.0	4.0								
PLAY	4.1	3.8	2.9	0	2.8	2.8	2.8	0	2.2	0	5.0	2.1								

REF.NO.	IC4205																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.0	0	0.9	0.5	0.6	0.6	1.3	1.3	0	1.3	0.1	5.0	5.0	0	1.4	1.3	0.6	0.6	0.6	0.9
REC	5.0	0	0.9	0.5	0.6	0.6	1.3	1.3	0	1.3	0.1	5.0	5.0	0	1.4	1.3	0.6	0.6	0.6	0.9
PLAY	5.0	0	0.9	0.5	0.6	0.6	1.3	1.3	1.3	1.3	5.0	0.1	5.0	1.3	1.4	1.3	0.6	0.6	0.5	0.9
REF.NO.	IC4205		IC4206								IC4207									
MODE	21	22	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7			
STOP	★	5.0	6.2	6.2	6.2	0	6.2	6.2	6.2	11.9	8.3	0	8.3	0	0	7.4	11.9			
REC	★	5.0	6.1	6.1	6.1	0	6.1	6.1	6.1	11.8	8.2	0	8.2	0	0	7.4	11.8			
PLAY	★	5.0	6.1	6.2	6.1	0	6.1	6.2	6.1	11.9	8.2	0	8.3	0	0	7.4	11.9			

VOLTAGE MEASUREMENT:
MONOSCOPE SIGNAL IN SP MODE.

★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

4-10
FM AUDIO
VOLTAGE CHART

REF.NO.	IC4208							IC4209															
MODE	1	2	3	4	5	6	7	1	2	3	4												
STOP	8.3	0	8.3	0	0	7.4	11.9	3.8	0	5.0	4.0												
REC	8.2	0	8.2	0	0	7.3	11.8	3.8	0	5.0	4.0												
PLAY	8.2	0	8.3	0	0	7.3	11.9	2.3	0	5.0	2.1												

REF.NO.	IC4210																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	2.8	0	★	2.8	2.8	3.7	2.6	2.5	4.9	0	0	1.4	3.9	3.0	2.5	0	3.3	3.4	0.7	4.2
REC	2.8	0	★	2.8	2.8	3.8	2.6	2.5	5.0	0	2.5	1.4	3.9	3.0	2.5	0	3.3	3.4	0.7	4.2
PLAY	2.8	0	★	2.8	2.8	2.3	2.4	2.1	5.0	0	2.5	1.5	3.4	2.4	2.5	0	3.1	3.7	0.8	4.1

REF.NO.	IC4210																			
MODE	21	22	23	24	25	26	27	28												
STOP	4.2	3.8	3.0	5.0	2.8	2.8	2.8	0												
REC	4.2	3.8	2.9	5.0	2.8	2.8	2.8	0												
PLAY	4.1	3.8	2.9	0	2.8	2.8	2.8	0												

REF.NO.	IC4211																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	6.0	5.9	5.9	5.9	0	0	0	5.9	5.9	5.9	6.0	11.8	11.9	11.9						
REC	5.9	5.9	5.9	5.9	0	0	0	5.9	5.9	5.9	5.9	11.7	11.7	11.8						
PLAY	5.9	5.9	5.9	5.9	0	0	0	5.9	5.9	5.9	5.9	11.8	11.8	11.9						

REF.NO.	IC4213								IC4214											
MODE	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9			
STOP	6.0	6.0	6.0	0	5.9	5.9	6.0	11.9	8.5	0	8.5	0.1	0	8.5	0.1	7.7	12.0			
REC	5.9	5.9	5.9	0	5.9	5.9	5.9	11.8	8.4	0	8.4	0	0	8.4	0	7.6	12.0			
PLAY	6.0	6.0	5.9	0	5.9	6.0	6.0	11.9	8.4	0	8.4	0	0	8.4	0	7.6	12.1			

REF.NO.	IC4215									IC4216										
MODE	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9		
STOP	8.5	0	8.5	0	0	8.5	0	7.7	12.1	0	0.4	1.0	2.0	0	2.0	1.0	0.4	12.1		
REC	8.5	0	8.5	0	0	8.5	0	7.7	12.0	0	0.4	1.0	2.0	0	2.0	1.0	0.4	12.0		
PLAY	8.5	0	8.5	0	0	8.5	0	7.7	12.1	0	0.4	1.0	2.0	0	2.0	1.0	0.3	12.0		

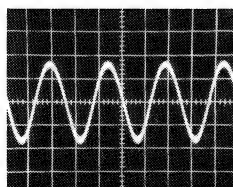
REF.NO.	IC4217								IC4218											
MODE	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10		
STOP	7.7	7.7	7.7	0	7.7	7.7	7.7	12.0	5.0	2.5	5.0	1.8	1.7	1.2	1.2	0	2.4	0		
REC	7.7	7.7	7.7	0	7.7	7.6	7.6	12.0	5.0	2.4	5.0	1.8	1.8	1.2	1.2	0	2.4	0		
PLAY	7.7	7.7	7.7	0	7.7	7.6	7.6	12.0	5.0	2.4	0	1.7	0	1.2	1.7	4.2	2.4	0		

REF.NO.	IC4219																			
MODE	1	2	3	4	5	6	7	8	9	10										
STOP	5.0	2.5	5.0	1.8	1.8	1.2	1.2	0	2.4	0										
REC	5.0	2.5	5.0	1.8	1.8	1.2	1.2	0	2.4	0										
PLAY	5.0	2.4	0	1.7	0	1.2	1.7	4.2	2.4	0										

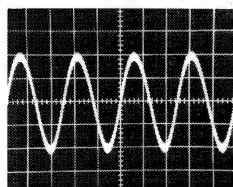
REF.NO.	TP4202	TP4203	TP4204	TP4205	TP4206	TP4207	TP4208	TP4209												
MODE																				
STOP	2.5	0	5.0	5.0	0	0	0	2.5												
REC	2.5	0	5.0	5.0	0	0	0	2.5												
PLAY	2.5	0	5.0	5.0	0	0	0	2.5												

VOLTAGE MEASUREMENT:
MONOSCOPE SIGNAL IN SP MODE.

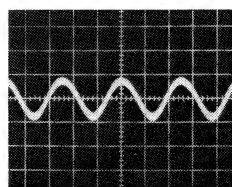
★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.



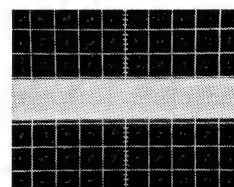
IC4206 ⑤ REC.SP.LP.SLP.
50mV/1msec. div.



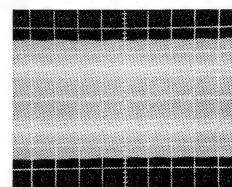
IC4205 ⑤ REC.SP.LP.SLP.
20mV/1msec. div.



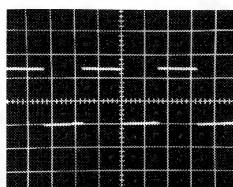
IC4203 ⑤ REC.SP.LP.SLP.
50mV/1msec. div.



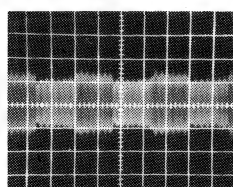
TP4203 REC.SP.LP.SLP.
20mV/10Usec. div.



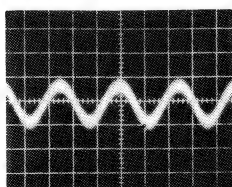
TP4207(HOT) REC.SP.LP.SLP.
TP4208(GND)
50mV/2msec. div.



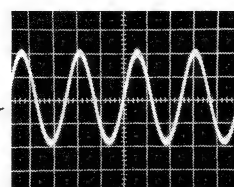
IC4201 ② PB.SP.LP.SLP.
2V/10msec. div.



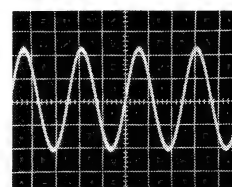
IC4203 ⑤ PB.SP.LP.SLP.
0.1V/10msec. div.



IC4203 ③ PB.SP.LP.SLP.
20mV/1msec. div.

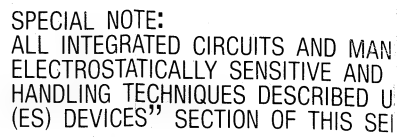


IC4218 ⑤ PB.SP.LP.SLP.
20mV/1msec. div.




IC4203 ① PB.SP.LP.SLP.
0.5V/1msec. div.

A

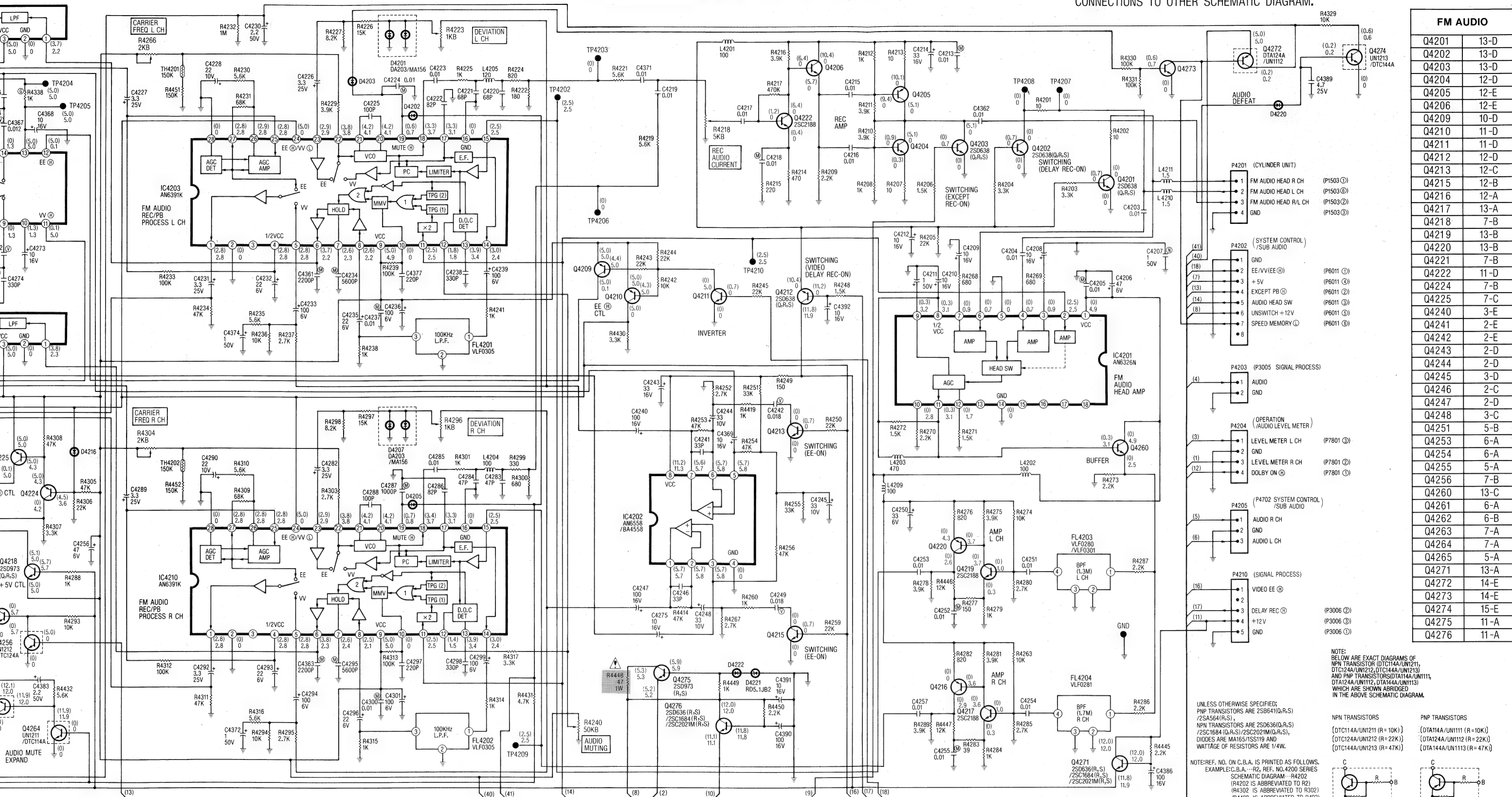


SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

4-11 FM AUDIO SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

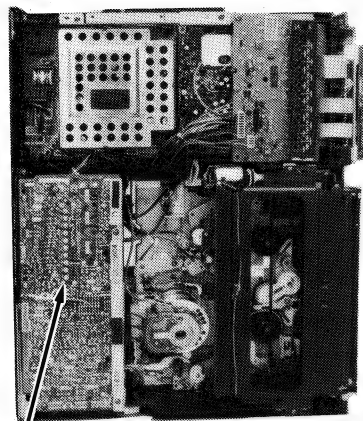


VJBS0424

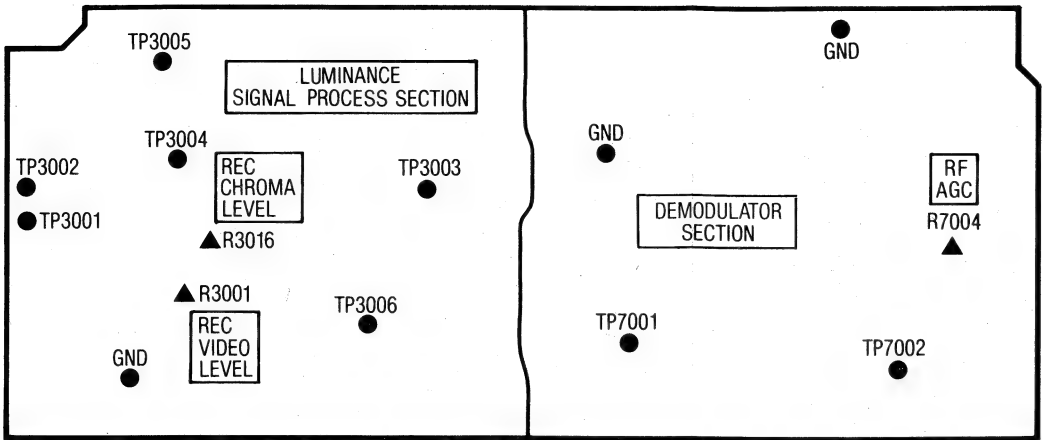
SIGNAL PROCESS C.B.A. VEPS0344E1

LUMINANCE S
VOLTAGE MEA

LOCATION OF TEST POINTS & ADJUSTMENT POINTS



SIGNAL PROCESS C.B.A.



P3001

1	EXCEPT PB (H)
2	EE/VV(EE (H))
3	LP/SLP (H)
4	SLP (H)
5	CUE/REVIEW/SS (H)
6	DELAY REC (H)
7	PB (H)
8	3.58MHz
9	HEAD SW
10	PICTURE CTL
11	VSS
12	ROTARY SW

P3002

1	AUDIO
2	AUDIO
3	GND
4	VIDEO
5	GND
6	VIDEO
7	GND
8	VIDEO

P3003

1	UNSWITCH +12V
2	+5V
3	+12V
4	GND

P3004

1	HEAD SW
2	V-LOCK
3	ENV DET
4	V-PULSE

P3005

1	AUDIO
2	GND

P3006

1	GND
2	DELAY REC (H)
3	+12V

P4501

1	GND
2	FULL ERASE

P7001

1	CATV (H)
2	AUDIO DEFEAT
3	
4	BU
5	BS
6	BV
7	AFT SW
8	BT
9	GND
10	TV/VCR

PIN (TO HEAD AMP)

1	GND
2	REC VIDEO
3	REC CHROMA
4	AUDIO MUTE (L)
5	DELAY REC (H)
6	HEAD SW
7	GND
8	PB VIDEO
9	ENV DET
10	PB (H)
11	PB CHROMA
12	HEAD SW
13	LP/SLP (H)
14	SLP (H)
15	GND

PIN (TO LUMINANCE)

1	GND
2	+5V
3	REC LUMINANCE
4	HSS
5	HEAD SW
6	VIDEO
7	GND
8	VIDEO
9	ARTIFICIAL V SYNC
10	PB CHROMA
11	EE/VV(EE (H))
12	LP/SLP (H)
13	PB VIDEO
14	DOC DET
15	PICTURE CTL
16	PB (H)
17	GND

PIN (TO CHROMINANCE)

1	PB (H)
2	DOC
3	+5V
4	CUE/REVIEW/SS (H)
5	HSS PULSE
6	HSS
7	VIDEO
8	ROTARY SW
9	PB CHROMA
10	REC CHROMA
11	3.58MHz
12	DELAY REC (H)
13	SLP (H)
14	LP/SLP (H)
15	GND
16	PB CHROMA
17	GND

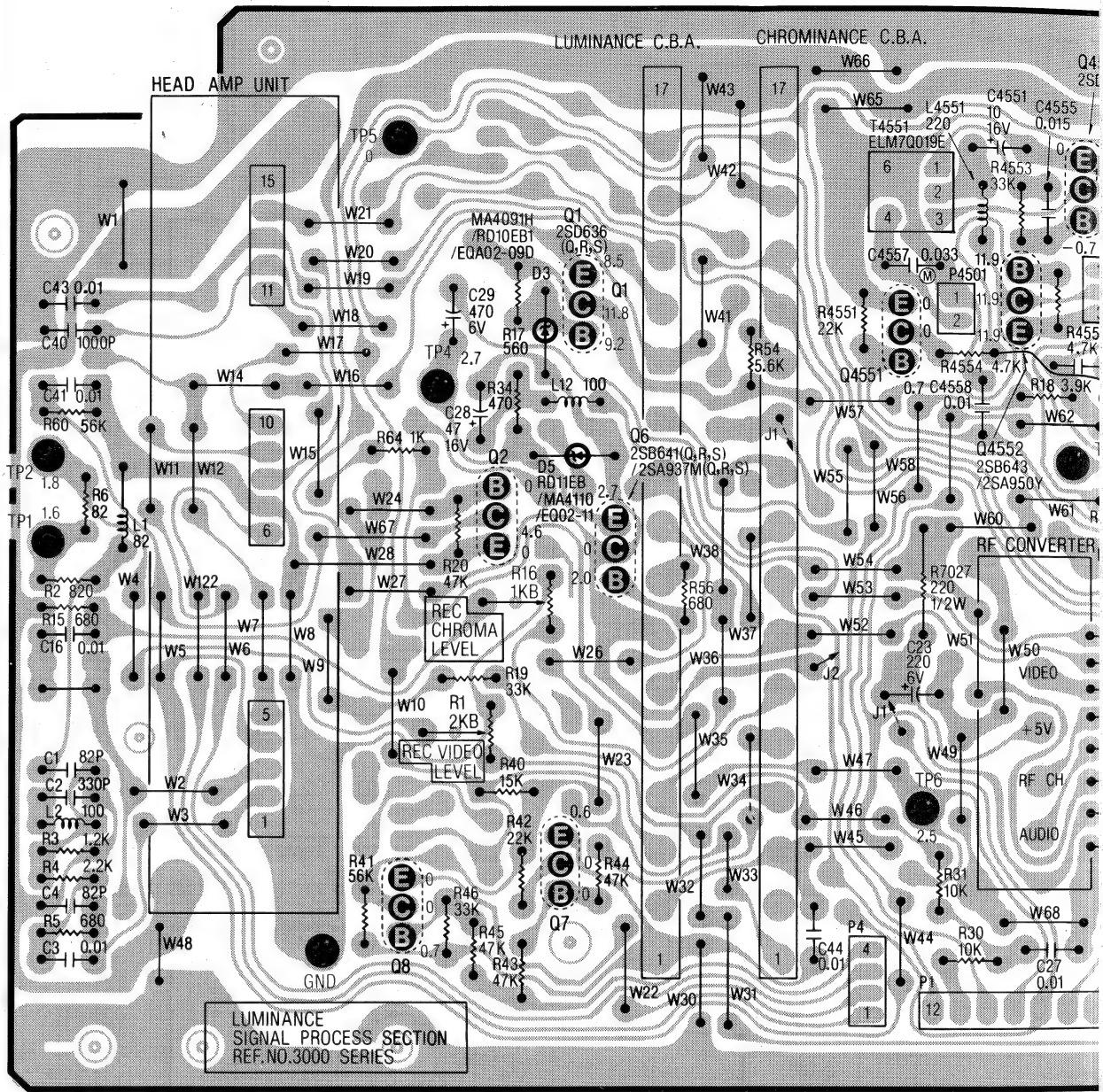
PIN (TO TV DEMODULATOR)

1	UHF/VHF AGC
2	RF AGC
3	GND
4	IF
5	GND
6	AFT SW
7	GND
8	+12V
9	AFT
10	VIDEO
11	
12	+12V
13	
14	GND
15	AUDIO

C

B

A

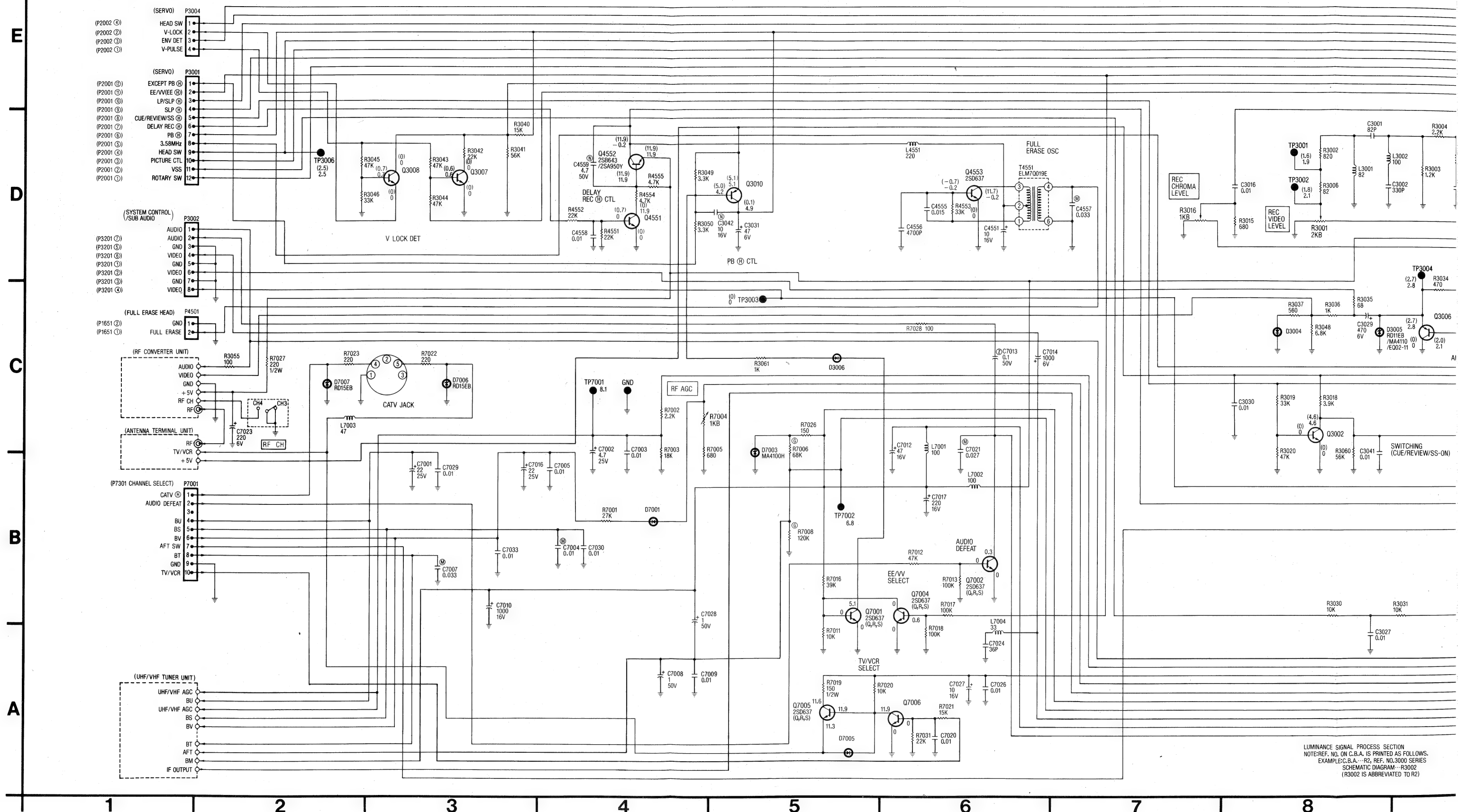


REF. NO.	Q3001			Q3002			Q3006			Q3007			Q3008			Q3010		
MODE	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
STOP	0	-0.2	-0.2	0	0	4.6	2.7	1.9	0	0	0.6	0	0	0.7	0	5.1	5.0	0.1
REC	8.5	9.2	11.8	0	0	4.6	2.7	1.9	0	0	0.6	0	0	0.7	0	5.1	5.0	0.1
PLAY	0	0	0	0	0	4.6	2.7	1.9	0	0	0.6	0	0	0.7	0	5.1	4.0	4.7
CUE	0	0	0	0	0.7	0	2.7	1.9	0	0	0.6	0	0.2	0.8	0.2	5.1	4.0	4.7
REV	0	0	0	0	0.7	0	2.7	2.0	0	0	0.6	0	0.2	0.8	0.2	5.1	4.0	4.7
REF. NO.	Q4551			Q4552			Q4553											
MODE	E	B	C	E	B	C	E	B	C									
STOP	0	0	12.0	12.1	12.1	-0.2	0	-0.2	-0.2									
REC	0	0.7	0	12.1	11.3	12.0	0	-0.7	11.9									
PLAY	0	0	12.0	12.1	12.1	0.2	0	0.2	0.2									
CUE	0	0	12.0	12.1	12.1	0.2	0	0.2	0.2									
REV	0	0	12.0	12.1	12.1	0.2	0	0.2	0.2									

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

DEMODULATOR SECTION
VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN STOP MODE.

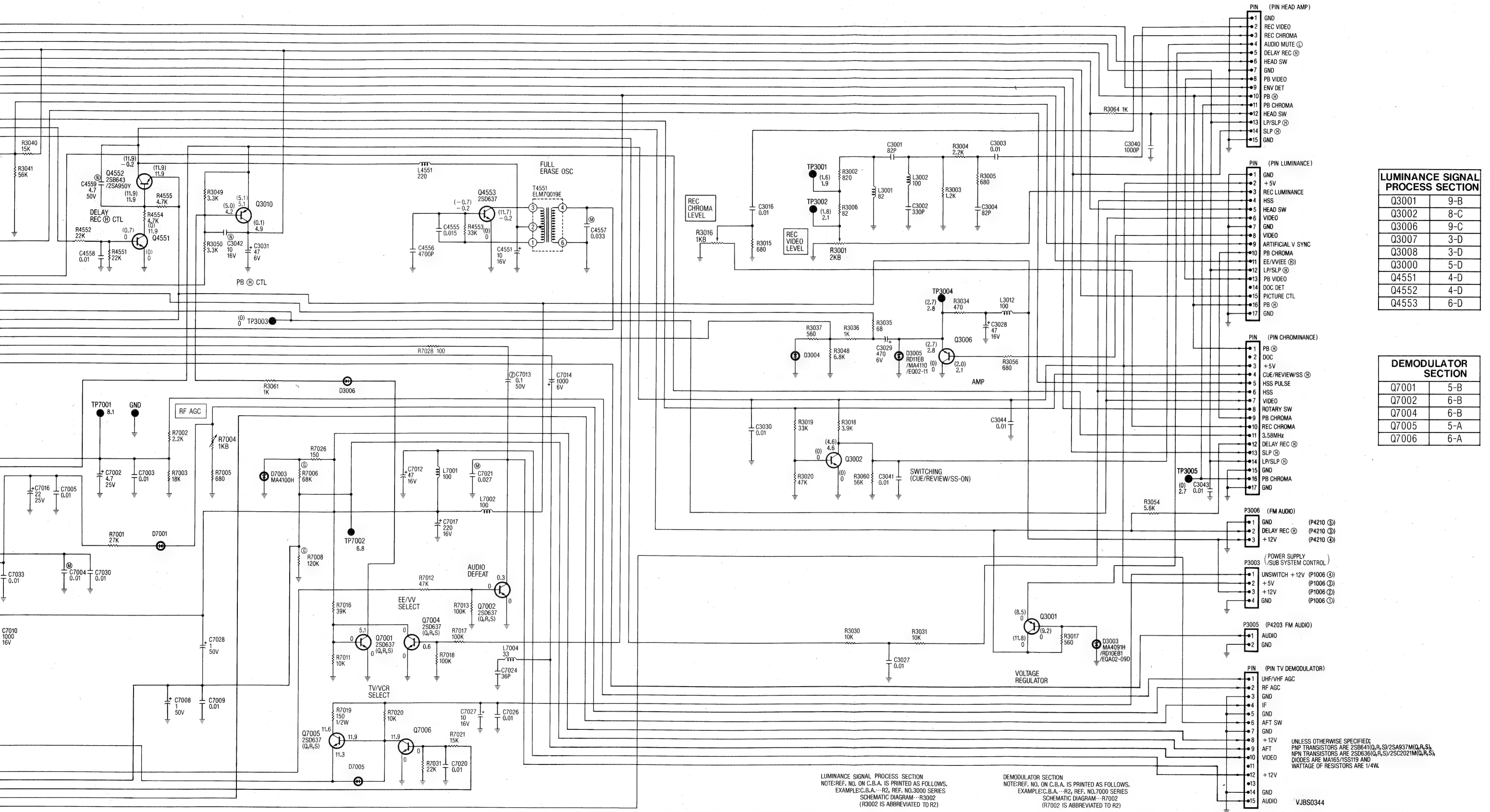
SPECIAL
ALL INTE
ELECTRO
HANDLING
(ES) DEV



LUMINANCE SIGNAL PROCESS SECTION
VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

DEMODULATOR SECTION
VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN STOP MODE.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



LUMINANCE SIGNAL PROCESS SECTION	
Q3001	9-B
Q3002	8-C
Q3006	9-C
Q3007	3-D
Q3008	3-D
Q4551	4-D
Q4552	4-D
Q4553	6-D

DEMODULATOR SECTION	
Q7001	5-B
Q7002	6-B
Q7004	6-B
Q7005	5-A
Q7006	6-A

LUMINANCE SIGNAL PROCESS SECTION
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. - R2, REF. NO. 3000 SERIES
SCHEMATIC DIAGRAM - R3002
(R3002 IS ABBREVIATED TO R2)

DEMODULATOR SECTION
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. - R2, REF. NO. 7000 SERIES
SCHEMATIC DIAGRAM - R7002
(R7002 IS ABBREVIATED TO R2)

UNLESS OTHERWISE SPECIFIED:
PNP TRANSISTORS ARE 2SD641(Q,R,S)/2SA937(M,Q,R,S),
NPN TRANSISTORS ARE 2SD636(Q,R,S)/2SC2021(M,Q,R,S),
DIODES ARE MA165/1SS119 AND
WATTAGE OF RESISTORS ARE 1/4W.

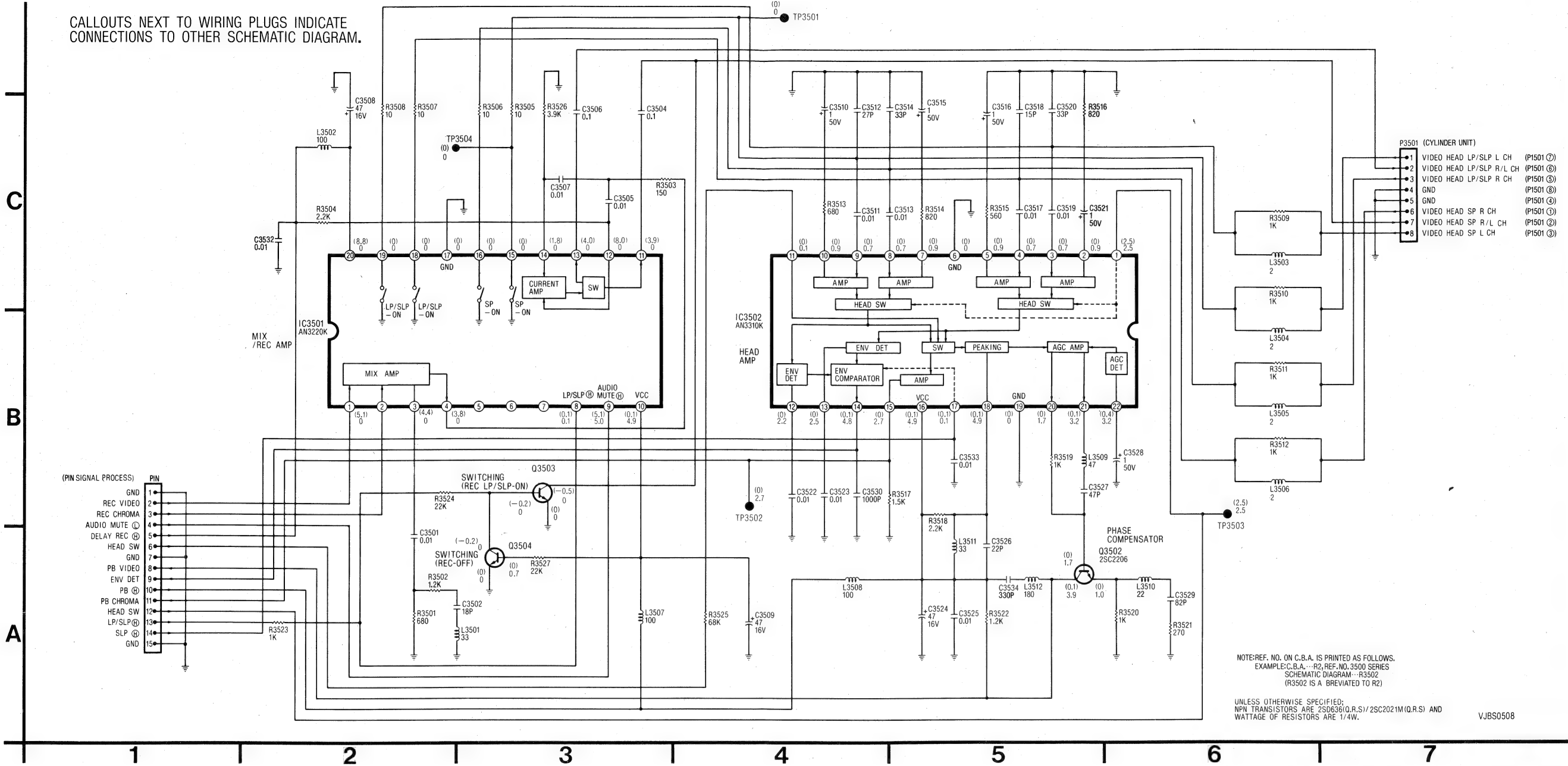
VJBS0344

HEAD AMP SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

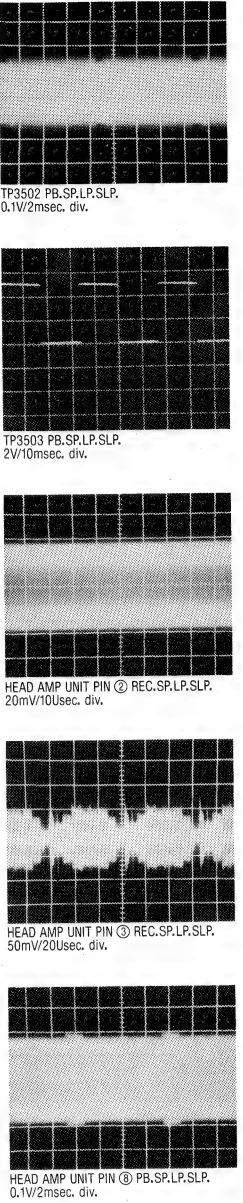
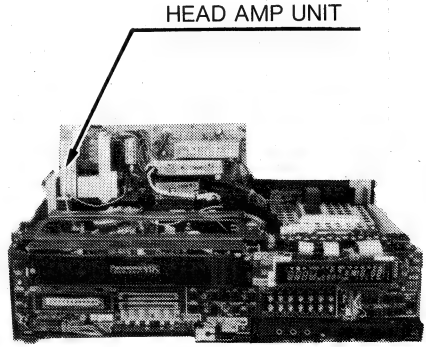


NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. - R2, REF. NO. 3500 SERIES
SCHEMATIC DIAGRAM - R3502
(R3502 IS A BREVIAITD TO R2)
UNLESS OTHERWISE SPECIFIED:
NPN TRANSISTORS ARE 2SD636(Q.R.S)/2SC2021M(Q.R.S) AND
WATTAGE OF RESISTORS ARE 1/4W.

VJBS0508

REF.NO.	IC3501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	0	*	*	*	0.1	4.7	0	0	0	0	0	0	0	0	0	0	0
REC	4.9	4.9	4.2	3.4	*	*	*	0.1	4.7	0.1	0.5	7.7	3.8	1.7	0	0	0	0	0	8.5
PLAY	0	0	0	0	*	*	*	0.1	4.7	4.8	0	0	0	0	0	0	0	0	0	0
CUE	0	0	0	0	*	*	*	0.1	4.7	4.8	0	0	0	0	0	0	0	0	0	0
REV	0	0	0	0	*	*	*	0	4.7	4.8	0	0	0	0	0	0	0	0	0	0
REF.NO.	IC3502																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	4.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0
REC	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.1	0	0
PLAY	2.5	0.9	0.7	0.7	0.9	0	0.9	0.7	0.7	0.9	0	1.9	2.2	4.7	2.6	4.7	0.1	4.7	0	1.6
CUE	2.5	0.9	0.7	0.7	0.9	0	0.9	0.7	0.7	0.9	1.5	2.0	2.0	2.5	2.6	4.6	0.1	4.7	0	1.6
REV	2.5	0.9	0.7	0.2	0.9	0	0.9	0.7	0.7	0.9	1.5	2.0	2.0	2.5	2.6	4.7	0.1	4.7	0	1.6
REF.NO.	IC3501																			
MODE	21	22	TP3501		TP3502		TP3503		TP3504											
STOP	0	0.3	0		0		4.9		0											
REC	0.1	0.3	0		0		2.5		0											
PLAY	3.1	3.0	0		2.6		2.5		0											
CUE	3.1	3.0	0		2.6		2.5		0											
REV	3.1	3.0	0		2.6		2.5		0											

VOLTAGE MEASUREMENT:
1. CUE, REVIEW.
COLOR BAR SIGNAL IN SLP MODE.
2. OTHERS
COLOR BAR SIGNAL IN SP MODE.
★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.



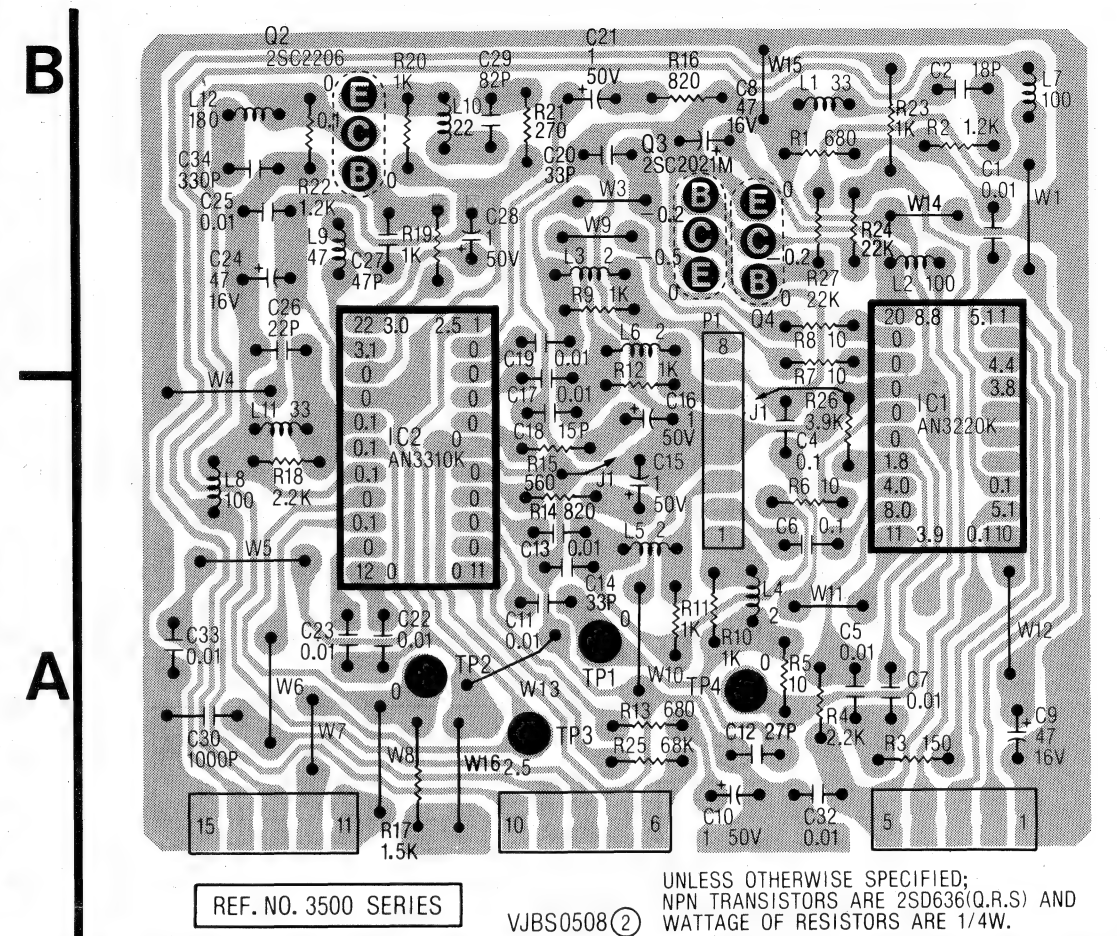
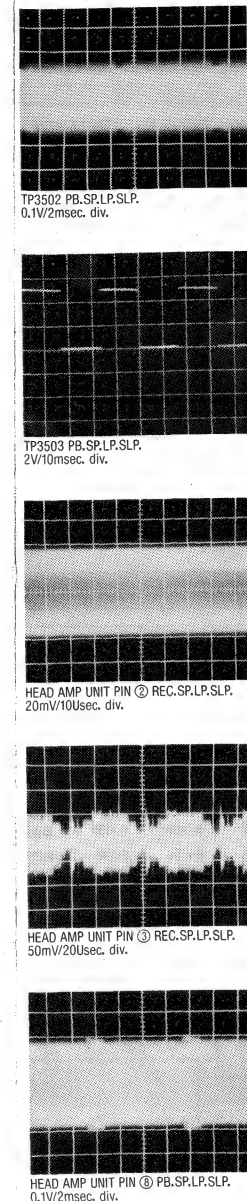
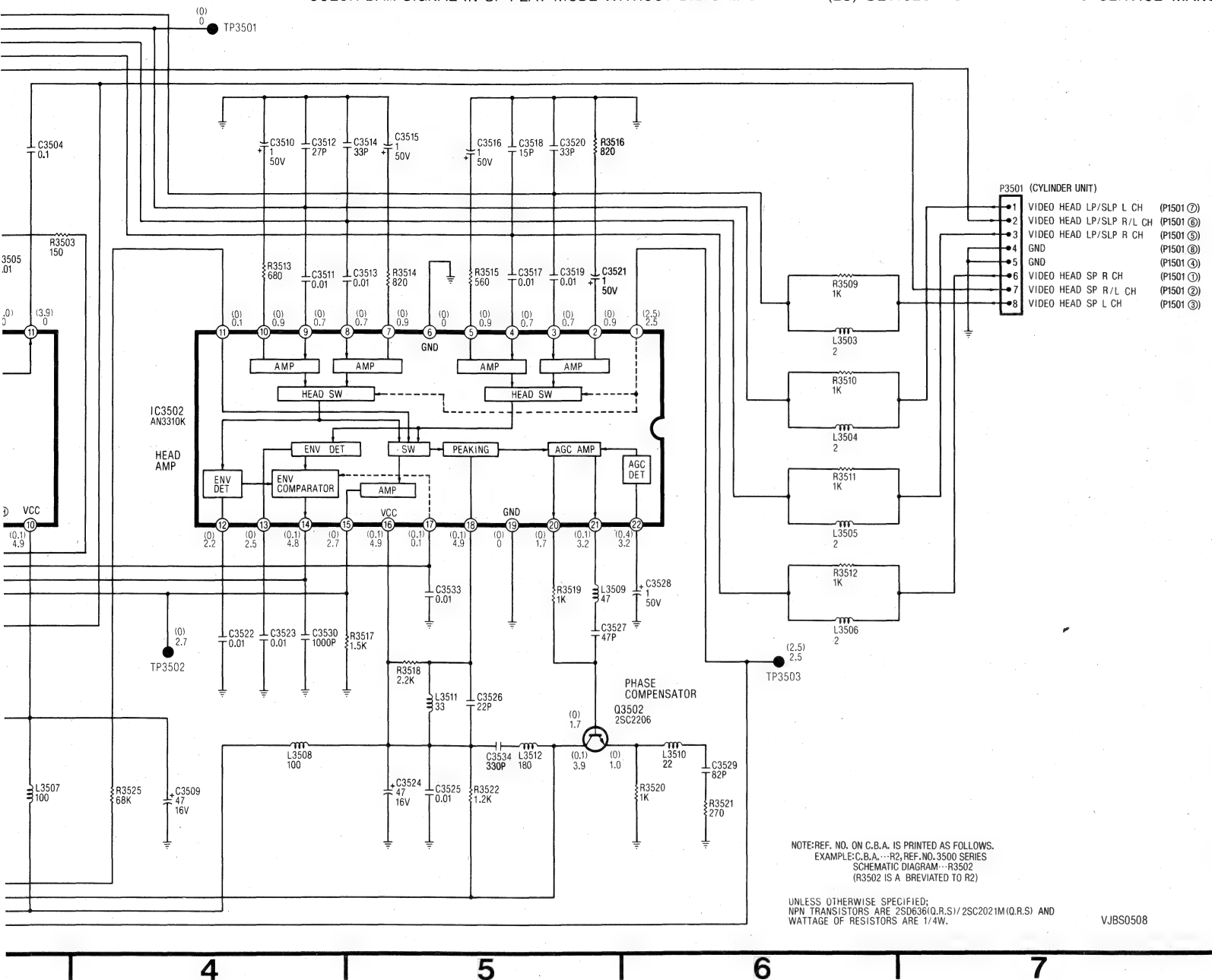
P3501	1	VIDEO HI
	2	VIDEO HI
	3	VIDEO HI
	4	GND
	5	GND
	6	VIDEO HI
	7	VIDEO HI
	8	VIDEO HI

VOLTAGE MEASUREMENT:
 COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
 COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

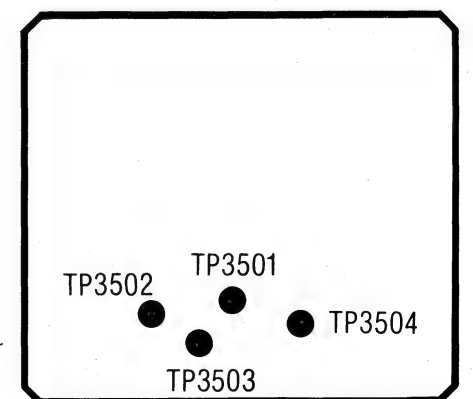
SPECIAL NOTE:
 ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
 ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
 HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
 (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

HEAD AMP UNIT VEPS0508B1

VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
 IN SP REC MODE.

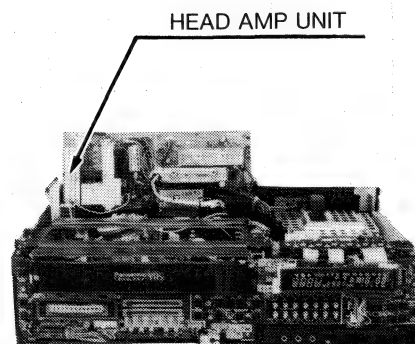


LOCATION OF TEST POINTS



6	17	18	19	20
	0	0	0	0
	0	0	0	8.5
	0	0	0	0
	0	0	0	0
	0	0	0	0
6	17	18	19	20
	0.1	0	0	0
	0.1	0.1	0	0
.7	0.1	4.7	0	1.6
6	0.1	4.7	0	1.6
.7	0.1	4.7	0	1.6

VOLTAGE MEASUREMENT:
 1. CUE, REVIEW.
 COLOR BAR SIGNAL IN SLP MODE.
 2. OTHERS
 COLOR BAR SIGNAL IN SP MODE.
 ★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

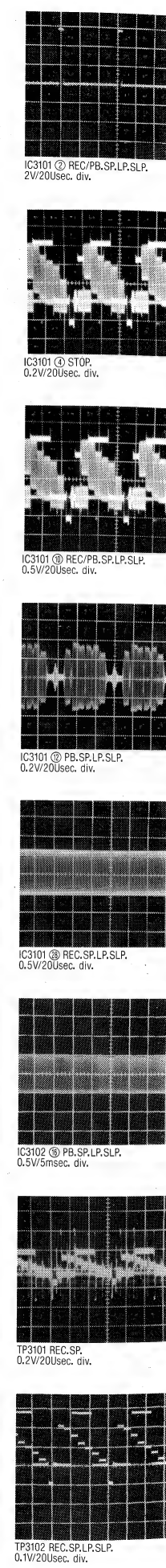


PIN	
1	VIDEO HEAD LP/SLP L CH
2	VIDEO HEAD LP/SLP R/L CH
3	VIDEO HEAD LP/SLP R CH
4	GND
5	GND
6	VIDEO HEAD SP R CH
7	VIDEO HEAD SP R/L CH
8	VIDEO HEAD SP L CH

PIN	
1	GND
2	REC VIDEO
3	REC CHROMA
4	AUDIO MUTE ①
5	DELAY REC ②
6	HEAD SW
7	GND
8	PB VIDEO
9	ENV DET
10	PB ③
11	PB CHROMA
12	HEAD SW
13	LP/SLP ④
14	SLP ⑤
15	GND

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

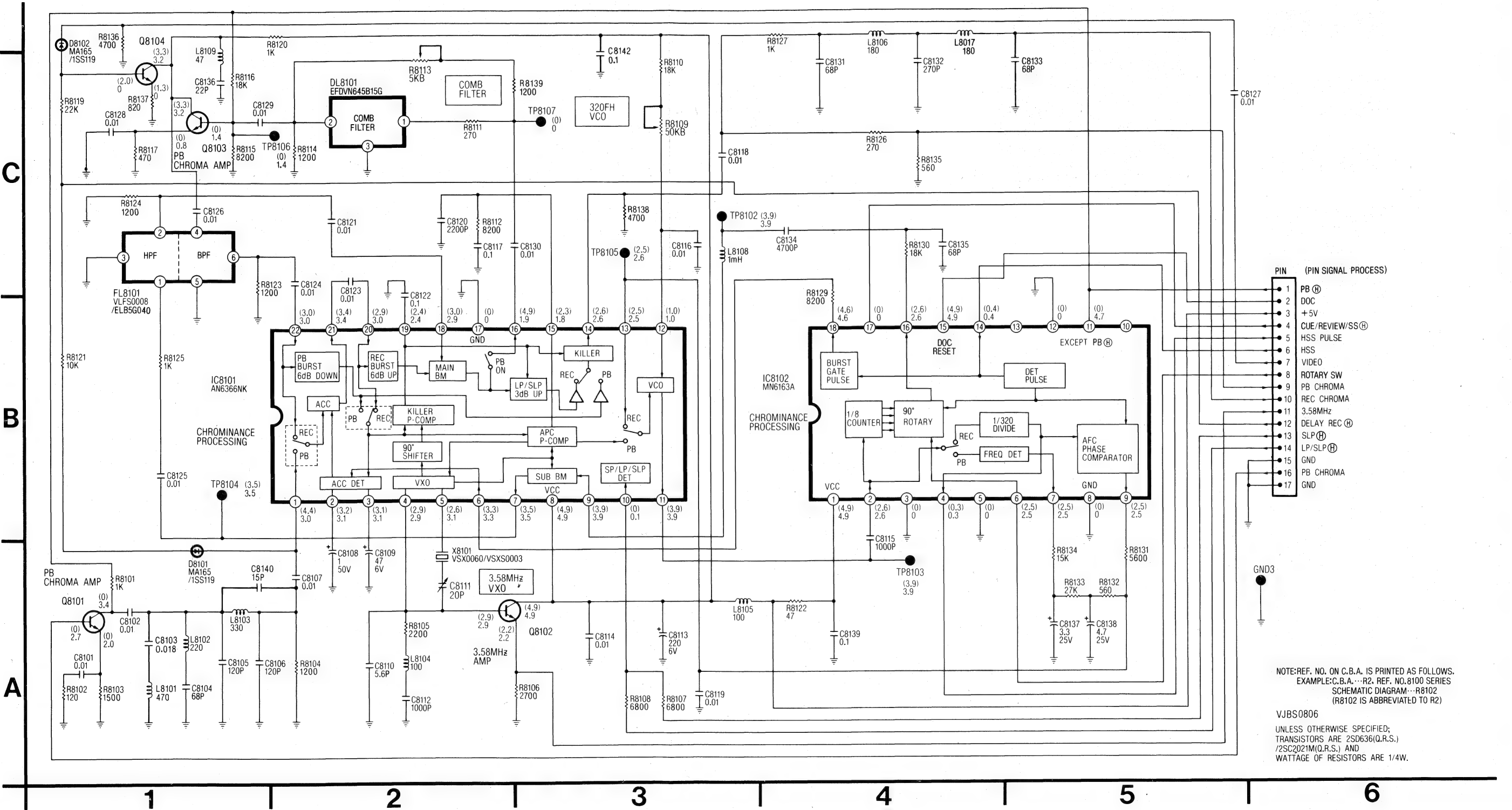


CHROMINANCE SCHEMATIC DIAGRAM

VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

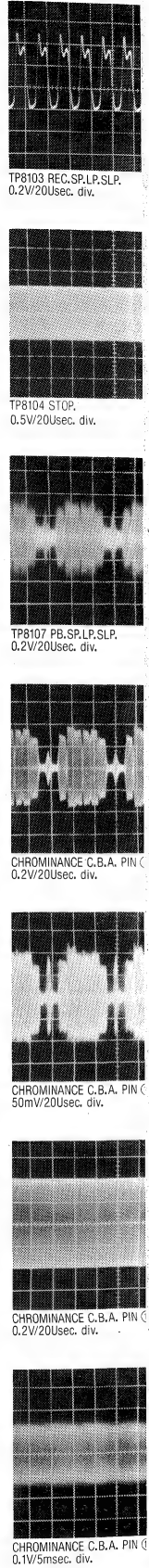
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.



NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. ...R2, REF. NO. 8100 SERIES
SCHEMATIC DIAGRAM ...R8102
(R8102 IS ABBREVIATED TO R2)

VJBS0806
UNLESS OTHERWISE SPECIFIED;
TRANSISTORS ARE 2SD636(Q.R.S.)
/2SC2021M(Q.R.S.) AND
WATTAGE OF RESISTORS ARE 1/4W.



VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN SP REC MODE.

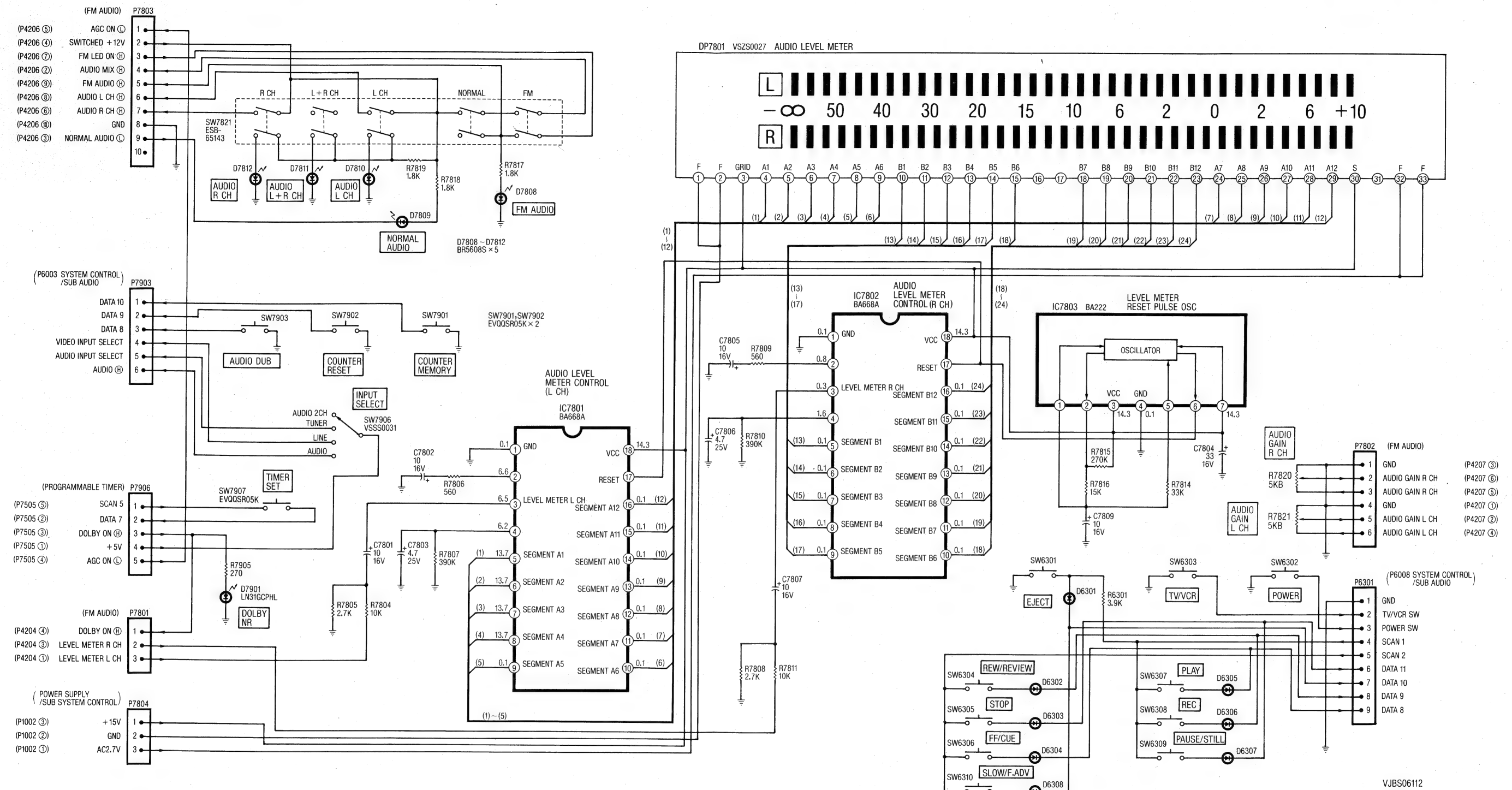
4-16

OPERATION/AUDIO LEVEL METER SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENT : COLOR BAR SIGNAL IN STOP MODE.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



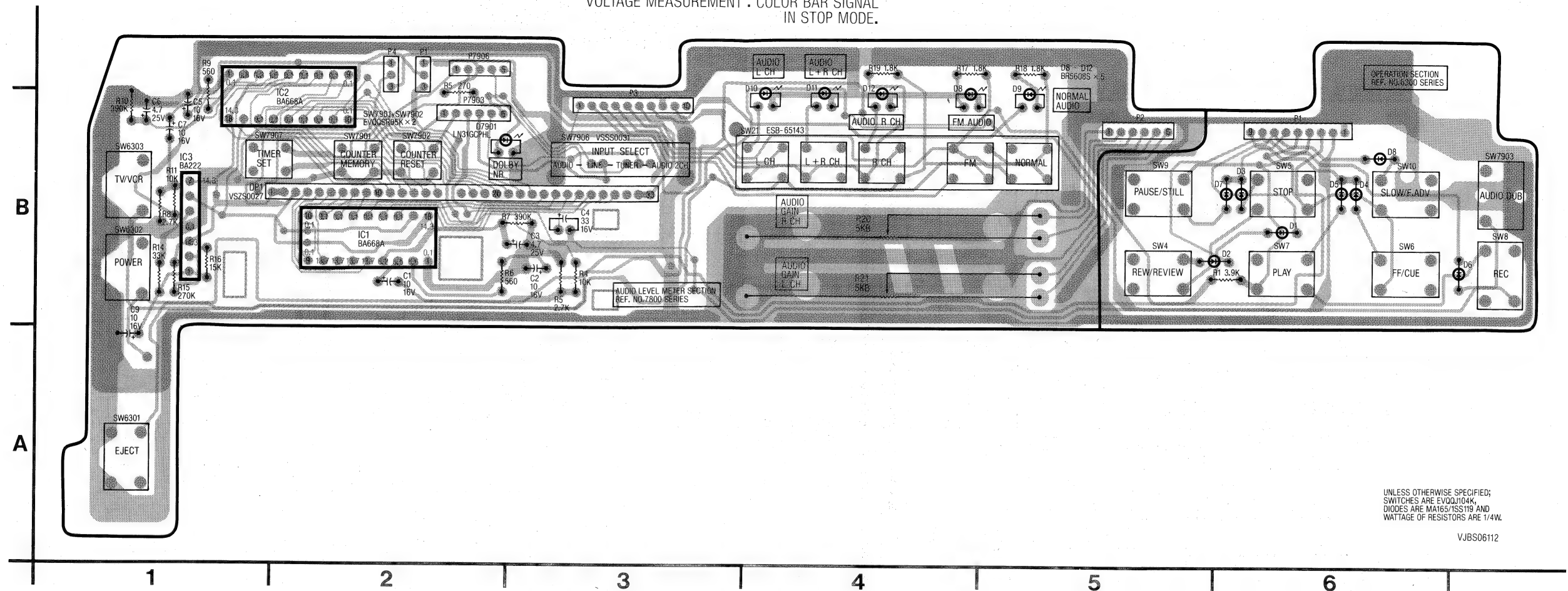
OPERATION SECTION
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. R2, REF. NO. 6300 SERIES
SCHEMATIC DIAGRAM: R6302
(R6302 IS ABBREVIATED TO R2)

AUDIO LEVEL METER SECTION
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. R2, REF. NO. 7800 SERIES
SCHEMATIC DIAGRAM: R7802
(R7802 IS ABBREVIATED TO R2)

UNLESS OTHERWISE SPECIFIED;
SWITCHES ARE EVQ0104K.
DIODES ARE MA165/1SS119 AND
WATTAGE OF RESISTORS ARE 1/4W.

4-17 OPERATION /AUDIO LEVEL METER CIRCUIT

VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN STOP MODE.



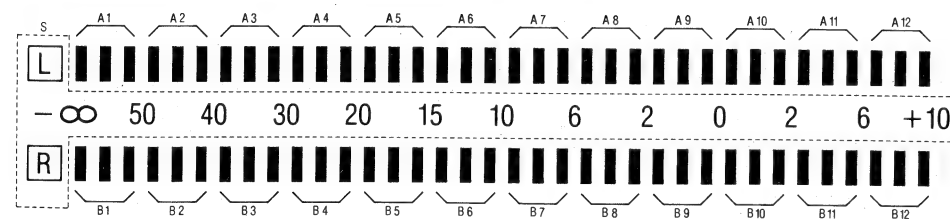
WJBS06112

P7802 (FM AUDIO)

1	GND	(P4207 ③)
2	AUDIO GAIN R CH	(P4207 ③)
3	AUDIO GAIN R CH	(P4207 ⑤)
4	GND	(P4207 ①)
5	AUDIO GAIN L CH	(P4207 ②)
6	AUDIO GAIN L CH	(P4207 ③)

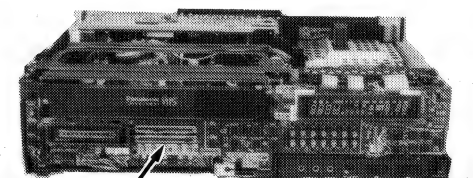
P6301 (P6008 SYSTEM CONTROL /SUB AUDIO)

1	GND	
2	TV/VCR SW	
3	POWER SW	
4	SCAN 1	
5	SCAN 2	
6	DATA 11	
7	DATA 10	
8	DATA 9	
9	DATA 8	



PIN NO.	SIGNAL NAME
31	_____
32	FILAMENT
33	FILAMENT

1	SCAN 5
2	DATA 7
3	DOLBY ON (H)
4	+5V
5	AGC ON (L)



OPERATION
/AUDIO LEVEL METER C.B.A.


A block diagram of the 4-18 POWER SUPPLY. The diagram shows a rectangular layout with several sections and test points. On the left, there is a section labeled "AUDIO LEVEL METER SECTION". To its right is a section labeled "AUDIO GAIN R CH". Further right, there is a section labeled "AUDIO GAIN L CH". To the right of the "AUDIO GAIN L CH" section is a section labeled "OPERATION SECTION". Between the "AUDIO GAIN R CH" and "AUDIO GAIN L CH" sections, there are two test points labeled "R7820" and "R7821", each marked with a triangle symbol. The entire diagram is titled "4-18 POWER SUPPLY" at the bottom right.

4-18
POWER SUPPLY
/SUB SYSTEM CONTROL
CIRCUIT

POWER SUPPLY/SUB SYSTEM CONTROL SCHEMATIC DIAGRAM

POWER SUPPLY SECTION
VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN STOP MODE.

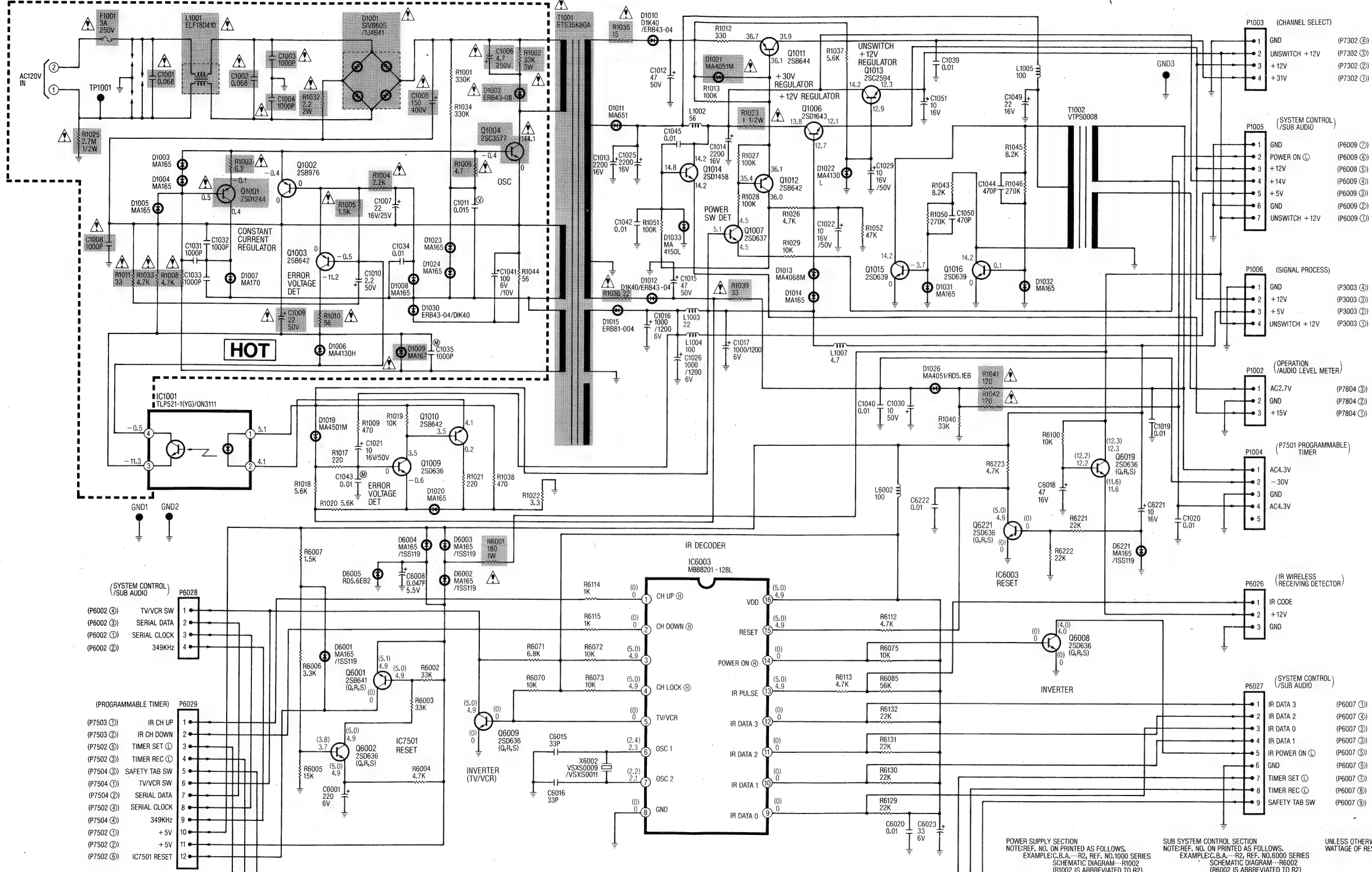
SUB SYSTEM CONTROL SECTION
VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

CALLOUTS NEXT TO WIRING PLUGS INDICATE
CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

HOT CIRCUIT. BE CAREFUL AND USE A ISLATION TRANSFORMER WHEN SERVICING.



POWER SUPPLY SECTION

Q1001	2-D
Q1002	2-D
Q1003	2-D
Q1004	3-D
Q1006	5-D
Q1007	4-D
Q1009	3-C
Q1010	3-C
Q1011	4-E
Q1012	4-D
Q1013	5-E
Q1014	4-D
Q1015	5-D
Q1016	5-D

SUB SYSTEM CONTROL SECTION

Q6001	3-B
Q6002	2-A
Q6008	6-B
Q6009	3-A
Q6019	6-C
Q6221	6-B

POWER SUPPLY SECTION
NOTE: REF. NO. ON PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. R2, REF. NO. 1000 SERIES
SCHEMATIC DIAGRAM: R1002
(R1002 IS ABBREVIATED TO R2)

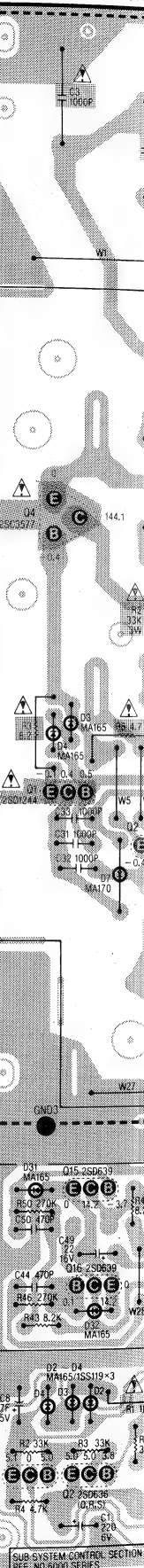
SUB SYSTEM CONTROL SECTION
NOTE: REF. NO. ON PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. R2, REF. NO. 6000 SERIES
SCHEMATIC DIAGRAM: R6002
(R6002 IS ABBREVIATED TO R2)

UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS ARE 1/4W.

VJBS0143

POWER

IS A HOT CIRCUIT



JBS0143

E

D

C

B

A

PROGRAMI



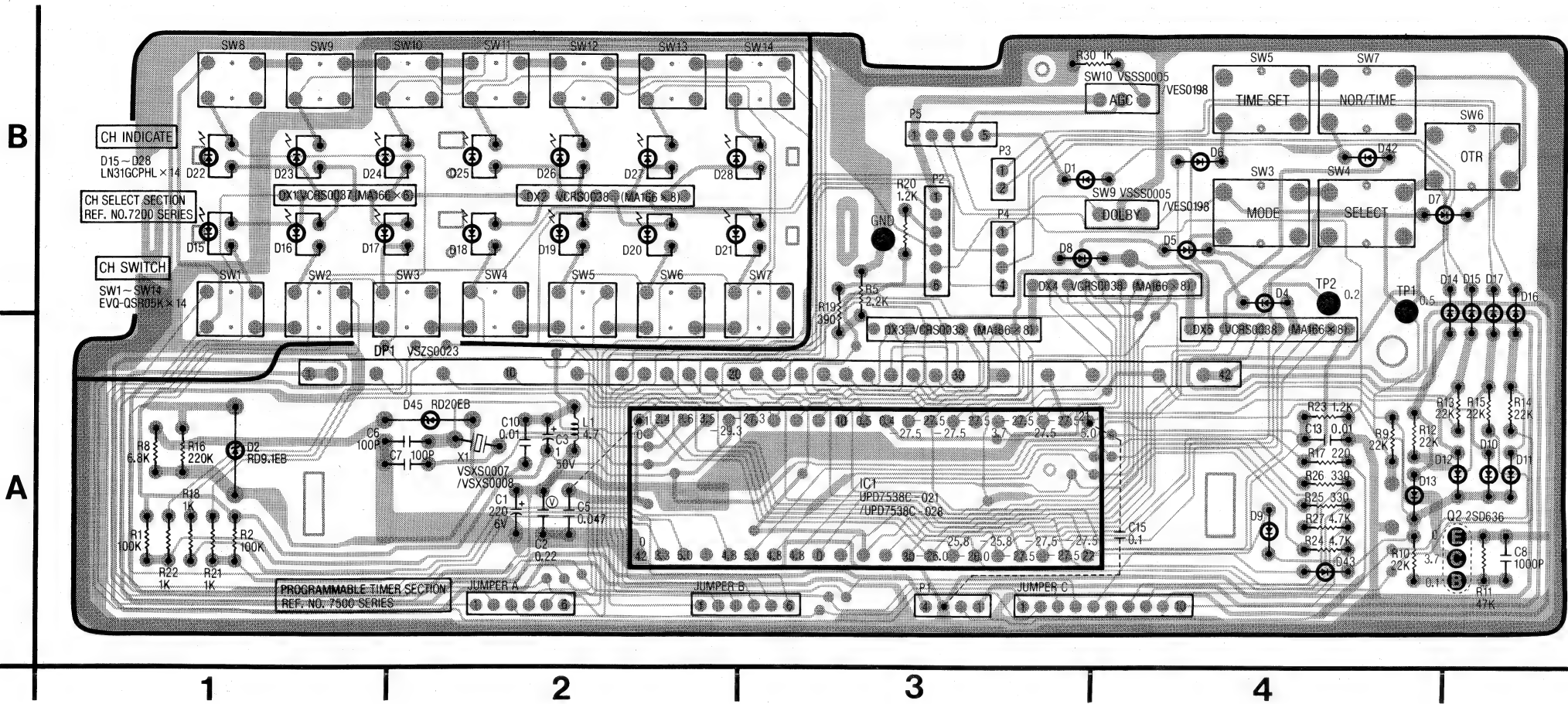
SCAN OUT	DATA IN
PIN NO.	17 (DATA IN)
15 (SCAN 1)	SELECT
19 (SCAN 2)	TIME SET
24 (SCAN 3)	MODE
25 (SCAN 4)	OTR
29 (SCAN 5)	TIMER
28 (SCAN 6)	RETURN

TOR DEVICES ARE
HE SPECIAL
TATICALLY SENSITIVE

PROGRAMMABLE TIMER C.B.A. VEPS07117D1

VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN STOP MODE.

4-19
PROGRAMMABLE TIMER
CIRCUIT



UNLESS OTHERWISE SPECIFIED;
SWITCHES ARE EVQ0104K,
DIODES ARE MAT66 AND
WATTAGE OF RESISTORS ARE 1/4W.

VJBS07117 ②

JUMPER A

1	KEY IN
2	CH LED
3	CH 7
4	CH 4
5	CH 6
6	CH 5

JUMPER B

1	CH 14
2	CH 13
3	CH 12
4	CH 11
5	CH 10
6	CH 9

JUMPER C

1	CH 8
2	CH 3
3	CH 1
4	CH 2
5	TIMER SET
6	GND
7	CH UP
8	CH DOWN
9	CH LOCK
10	TV/VCR

P7501

1	AC4.3V
2	-30V
3	GND
4	AC4.3V

P7502

1	+5V
2	+5V
3	TIMER REC
4	SERIAL CLOCK
5	TIMER SET
6	IC7501 RESET

P7503

1	IR CH UP
2	IR CH DOWN

P7504

1	TV/VCR SW
2	SERIAL DATA
3	SAFETY TAB SW
4	349KHz

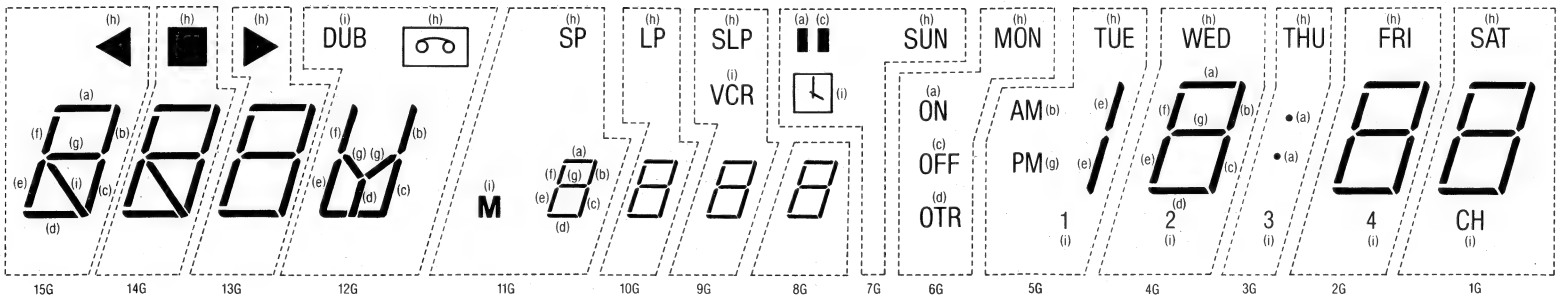
P7505

1	+5V
2	DATA 7
3	DOLBY ON
4	AGC ON
5	SCAN 5

IC7501
KEY MATRIX CHART

SCAN OUT	DATA IN
PIN NO.	17 (DATA IN)
15 (SCAN 1)	SELECT
19 (SCAN 2)	TIME SET
24 (SCAN 3)	MODE
25 (SCAN 4)	OTR
29 (SCAN 5)	TIMER
28 (SCAN 6)	RETURN

DISPLAY TUBE (DP7501) CONNECTION CHART



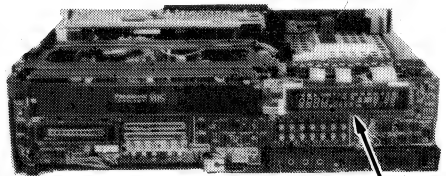
PIN NO.	SIGNAL NAME
1	FILAMENT
2	FILAMENT
3	---
4	GRID 15G
5	---
6	---
7	GRID 14G
8	---
9	---
10	GRID 13G

PIN NO.	SIGNAL NAME
11	---
12	---
13	GRID 12G
14	---
15	SEGMENT e
16	SEGMENT c
17	GRID 11G
18	SEGMENT g
19	GRID 10G
20	SEGMENT b

PIN NO.	SIGNAL NAME
21	GRID 9G
22	SEGMENT f
23	GRID 8G
24	GRID 7G
25	SEGMENT a
26	GRID 6G
27	SEGMENT h
28	SEGMENT d
29	GRID 5G
30	---

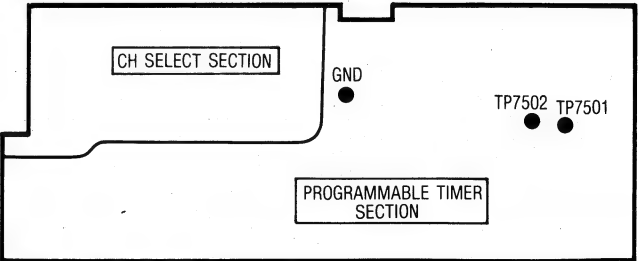
PIN NO.	SIGNAL NAME
31	---
32	GRID 4G
33	---
34	GRID 3G
35	---
36	GRID 2G
37	---
38	---
39	GRID 1G
40	---

PIN NO.	SIGNAL NAME
41	FILAMENT
42	FILAMENT



PROGRAMMABLE TIMER C.B.A.

LOCATION OF TEST POINTS



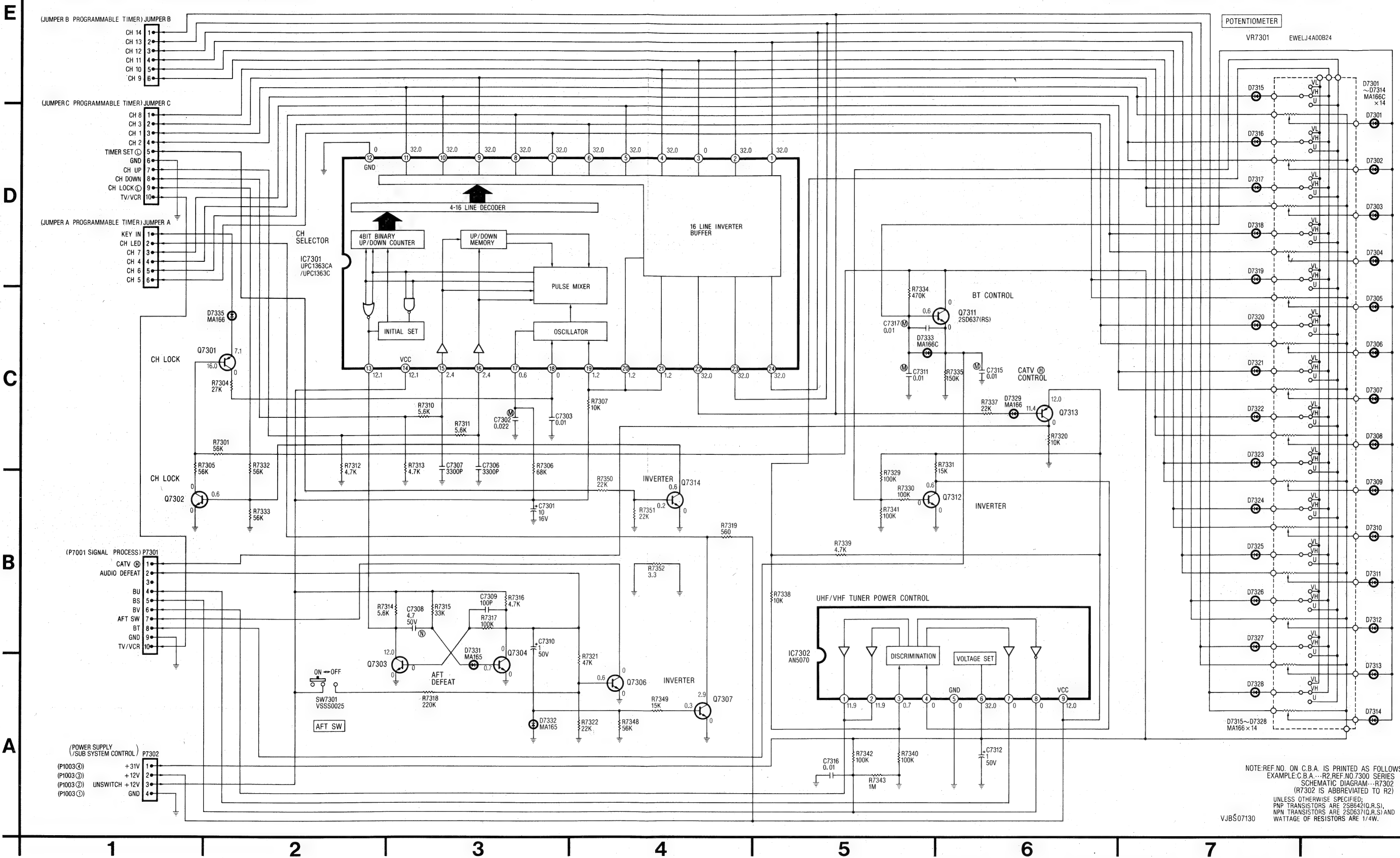
4-20
CHANNEL SELECT
CIRCUIT

CHANNEL SELECT SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENT : COLOR BAR SIGNAL IN STOP MODE.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



CHANNEL SELECT	
Q7301	2-C
Q7302	1-B
Q7303	3-A
Q7304	3-A
Q7306	4-A
Q7307	4-A
Q7311	5-C
Q7312	6-B
Q7313	6-C
Q7314	4-B

NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. - R2 REF. NO. 7300 SERIES
SCHEMATIC DIAGRAM - R7302
(R7302 IS ABBREVIATED TO R2)
UNLESS OTHERWISE SPECIFIED:
PNP TRANSISTORS ARE 2SB642(Q.R.S.)
NPN TRANSISTORS ARE 2SD637(Q.R.S.) AND
WATTAGE OF RESISTORS ARE 1/4W.

VJB507130

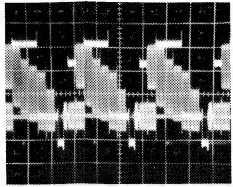
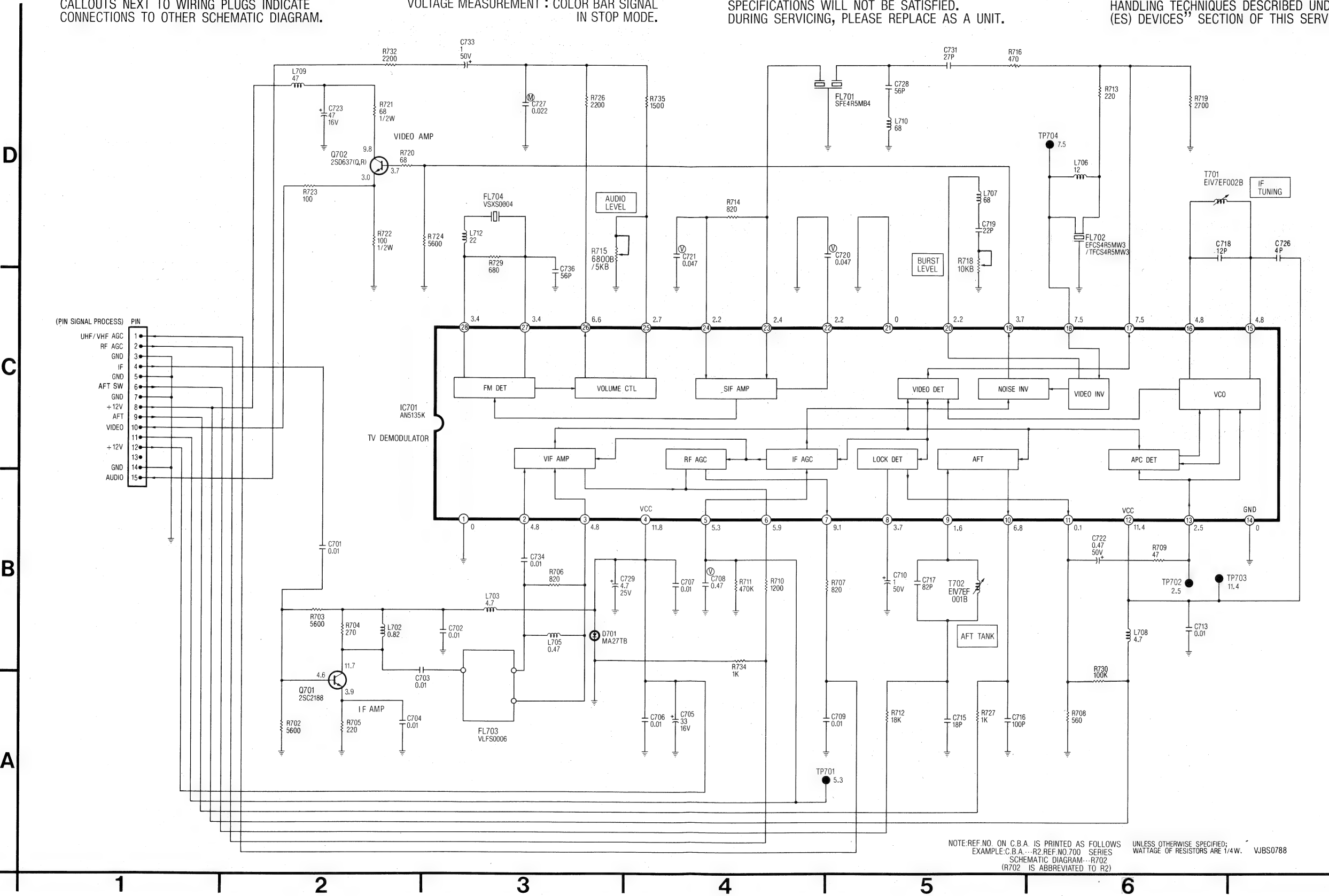
TV DEMODULATOR SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

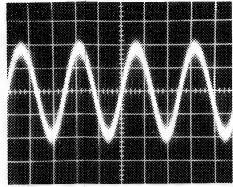
VOLTAGE MEASUREMENT : COLOR BAR SIGNAL IN STOP MODE.

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



TV DEMODU UNIT PIN @ STOP.
0.2V/20Usec. div.



TV DEMODU UNIT PIN @ STOP.
50mV/1msec. div.

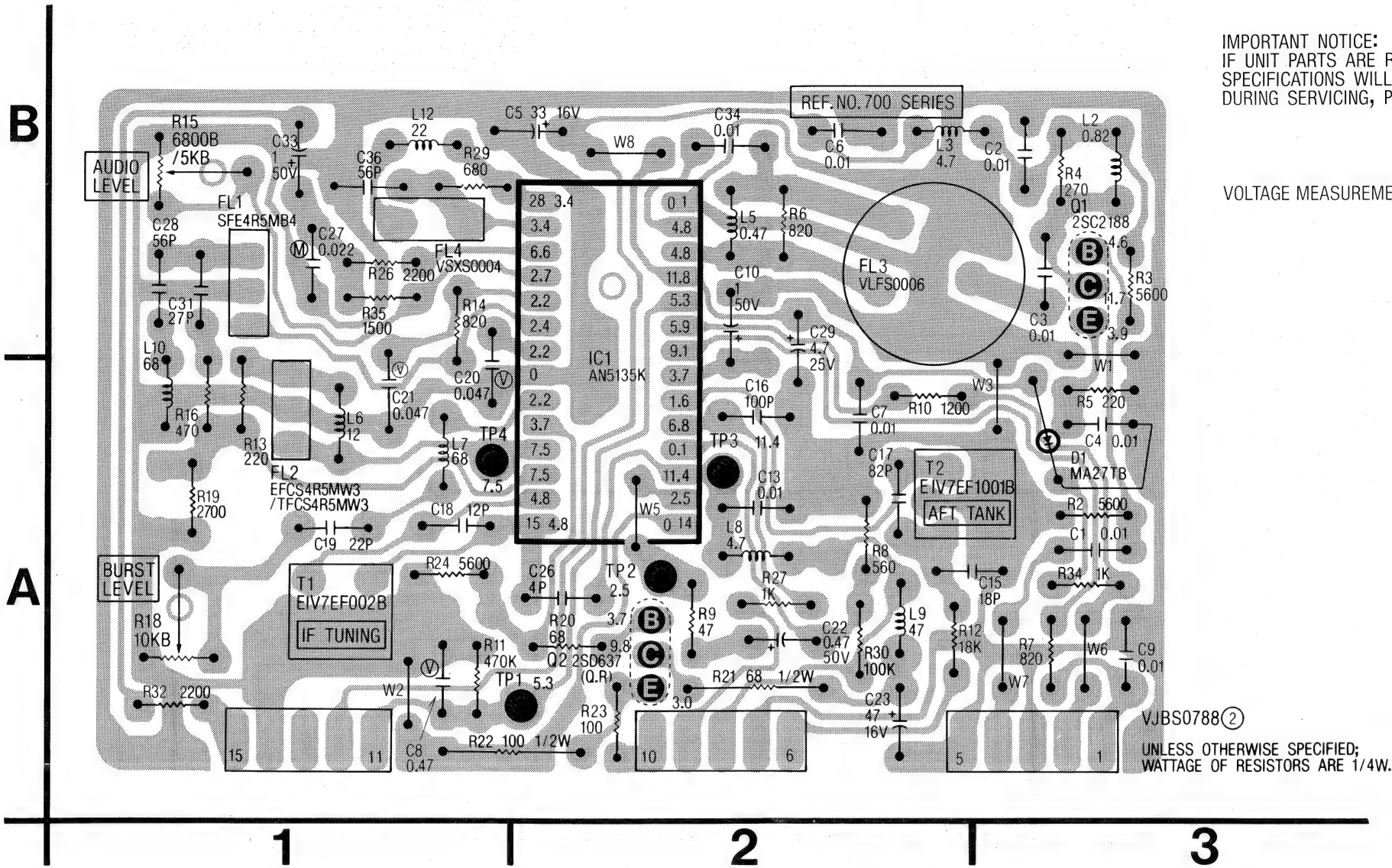
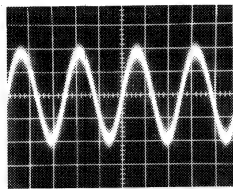
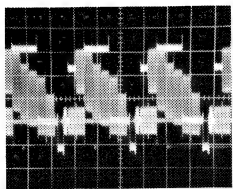
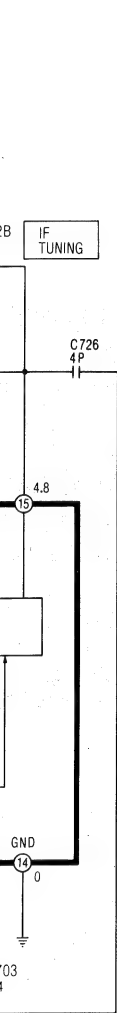
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS
EXAMPLE: C.B.A. ... R2 REF. NO. 700 SERIES
SCHEMATIC DIAGRAM ... R702
(R702 IS ABBREVIATED TO R2)
UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS ARE 1/4W. VJBS0788

TV DEMODULATOR UNIT VEQS0257

UNITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
N OF THIS SERVICE MANUAL.

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

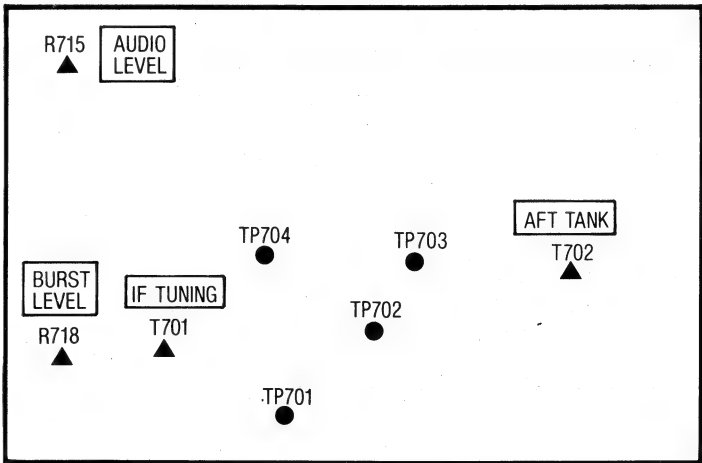
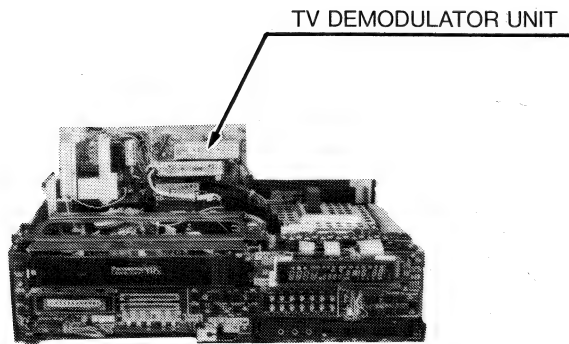
VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN STOP MODE.



PIN	
1	UHF/VHF AGC
2	RF AGC
3	GND
4	IF
5	GND
6	AFT SW
7	GND
8	+12V
9	AFT
10	VIDEO
11	
12	+12V
13	
14	GND
15	AUDIO

VJBS0788②
UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS ARE 1/4W.

LOCATION OF TEST POINTS & ADJUSTMENT POINTS



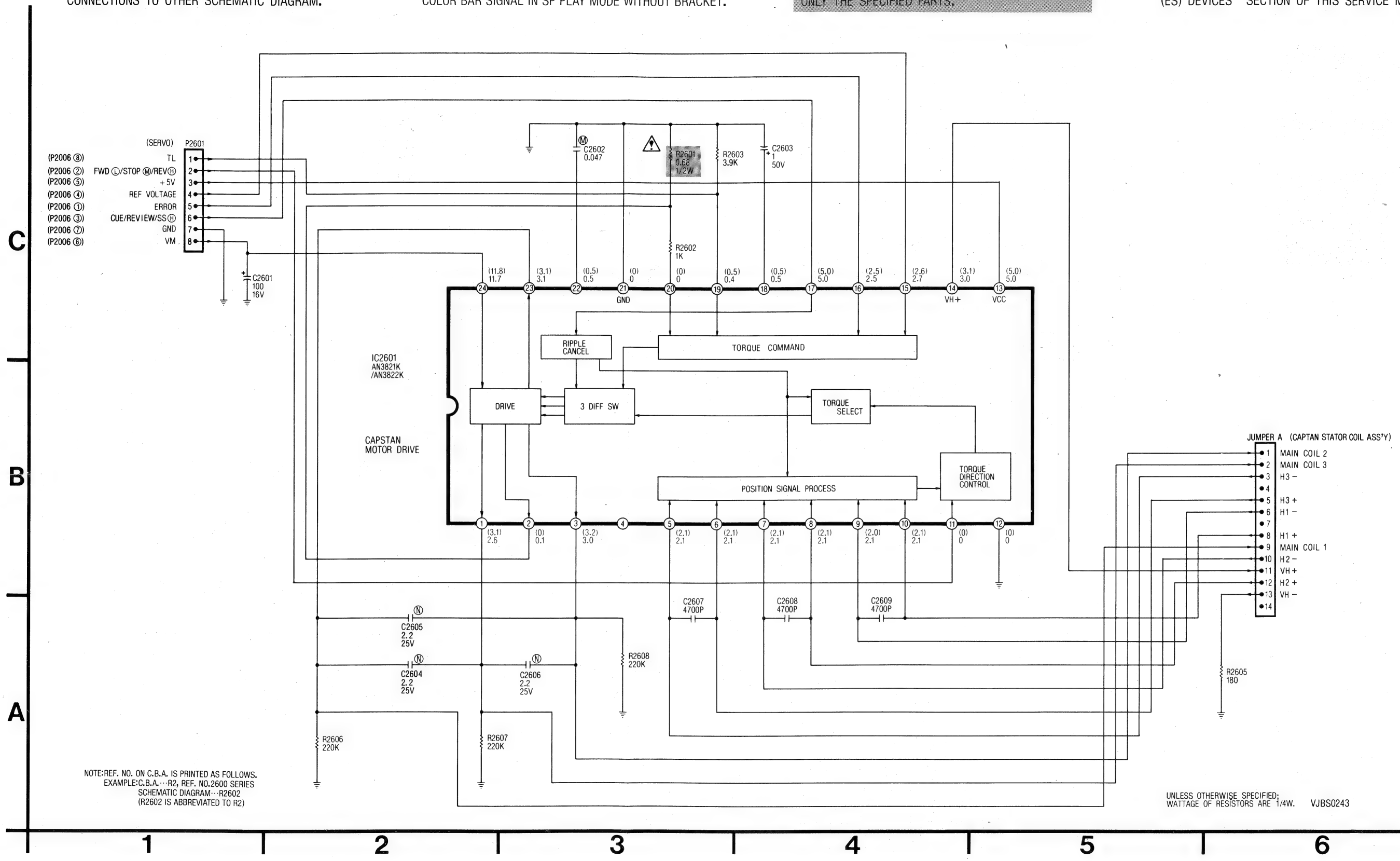
CAPSTAN MOTOR DRIVE SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENT:
COLOR BAR SIGNAL IN SP REC MODE WITH BRACKET.
COLOR BAR SIGNAL IN SP PLAY MODE WITHOUT BRACKET.

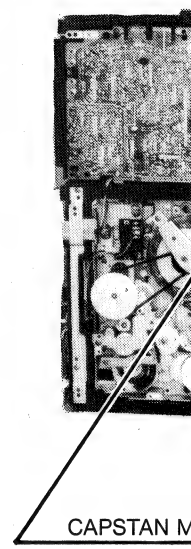
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚡ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.
EXAMPLE: C.B.A. ... R2, REF. NO. 2600 SERIES
SCHEMATIC DIAGRAM ... R2602
(R2602 IS ABBREVIATED TO R2)

UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS ARE 1/4W. VJBS0243

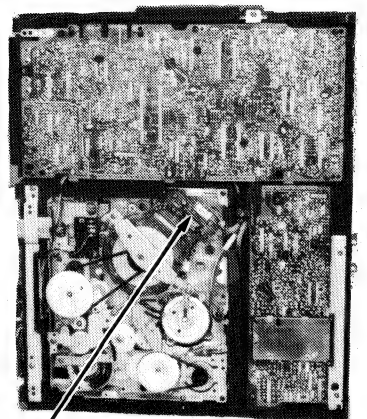


CAPSTAN MOTOR DRIVE C.B.A. VEPS0243C1

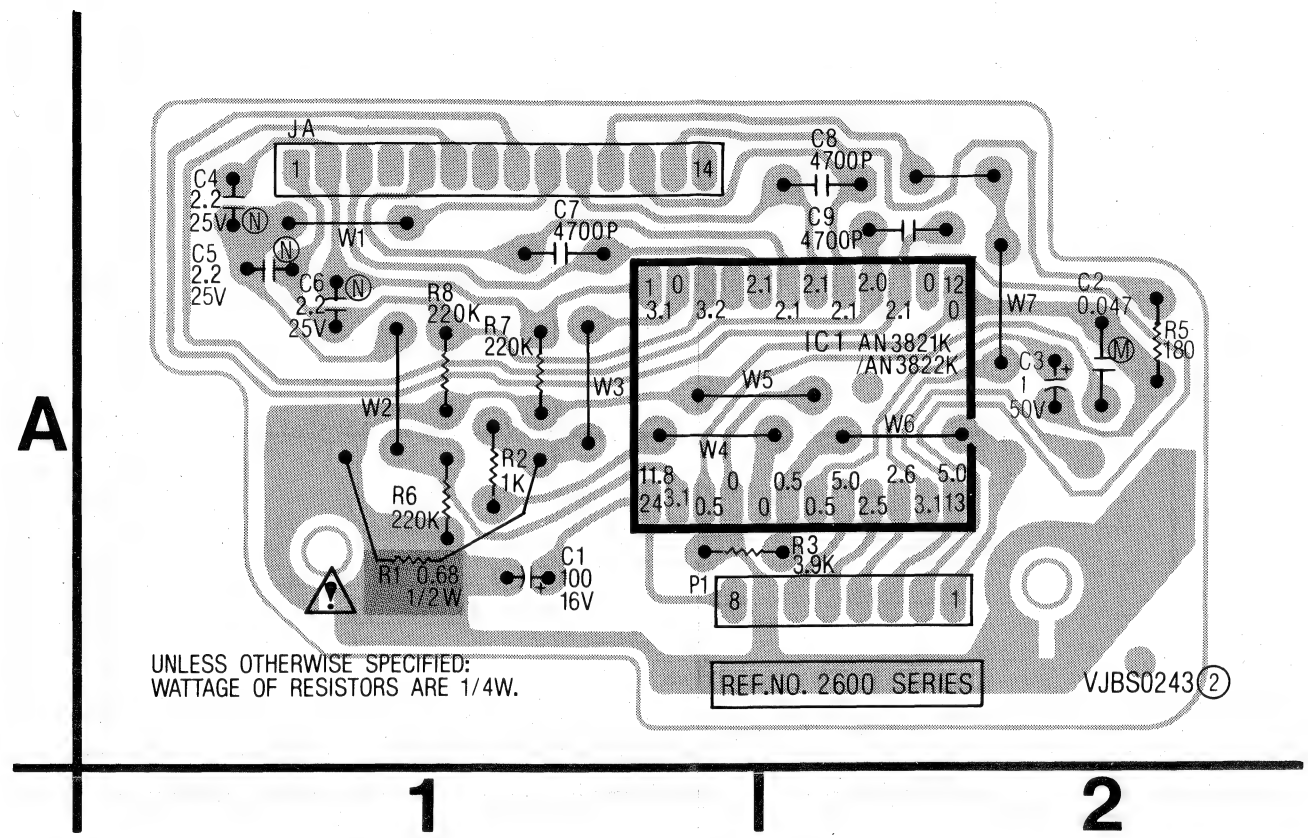
TE:
ATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
TICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
ECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
S" SECTION OF THIS SERVICE MANUAL.

VOLTAGE MEASUREMENT : COLOR BAR SIGNAL
IN SP REC MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.



CAPSTAN MOTOR DRIVE C.B.A.



UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS ARE 1/4W.

REF.NO. 2600 SERIES

VJBS0243②

P2601

1	TL
2	FWD Ⓛ/STOP Ⓜ/REV Ⓢ
3	+5V
4	REF VOLTAGE
5	ERROR
6	CUE/REVIEW/SS Ⓢ
7	GND
8	VM

JUMPER A

1	MAIN COIL 2
2	MAIN COIL 3
3	H3—
4	
5	H3+
6	H1—
7	
8	H1+
9	MAIN COIL 1
10	H2—
11	VH+
12	H2+
13	VH—
14	

JUMPER A (CAPTAN STATOR COIL ASS'Y)

- 1 MAIN COIL 2
- 2 MAIN COIL 3
- 3 H3—
- 4
- 5 H3+
- 6 H1—
- 7
- 8 H1+
- 9 MAIN COIL 1
- 10 H2—
- 11 VH+
- 12 H2+
- 13 VH—
- 14

REF.NO.	IC2601																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	2.0	0	2.0	★	2.0	2.1	2.1	2.0	2.0	2.1	2.1	0	4.9	3.0	2.6	2.2	5.0	0.6	0.5	0
REC	3.1	0	3.2	★	2.1	2.1	2.1	2.1	2.0	2.1	0	0	5.0	3.1	2.6	2.5	5.0	0.5	0.5	0
PLAY	2.6	0.1	3.0	★	2.1	2.1	2.1	2.1	2.1	2.1	0	0	5.0	3.0	2.7	2.5	5.0	0.5	0.4	0
CUE	4.8	0.1	4.8	★	2.1	2.1	2.1	2.1	2.1	2.1	0	0	4.9	3.0	2.6	2.5	5.0	0.5	0.5	0.1
REV	4.7	0.1	4.8	★	2.1	2.1	2.1	2.1	2.1	2.1	4.7	0	5.0	3.0	2.6	2.4	5.0	0.5	0.4	0.1
F.ADV.	2.3	0	2.2	★	2.0	2.1	2.1	2.1	2.1	2.1	1.9	0	4.9	3.0	2.6	2.7	4.9	0.5	0.4	0
SLOW(1/2)	2.3	0	2.2	★	2.1	2.1	2.1	2.1	2.1	2.1	1.9	0	5.0	3.0	2.6	2.0	5.0	0.5	0.5	0

REF.NO.	IC2601																			
MODE	21	22	23	24																
STOP	0	0	2.0	11.8																
REC	0	0.5	3.1	11.8																
PLAY	0	0.5	3.1	11.7																
CUE	0	0.5	4.8	11.8																
REV	0	0.5	4.9	11.7																
F.ADV.	0	0.2	2.0	11.8																
SLOW(1/2)	0	0.1	2.2	11.8																

VOLTAGE MEASUREMENT:
1. CUE, REVIEW, FRAME ADVANCE, SLOW.
COLOR BAR SIGNAL IN SLP MODE.
2. OTHERS
COLOR BAR SIGNAL IN SP MODE.
★ : UNMEASURABLE OR UNNECESSARY TO MEASURE.

SE SPECIFIED;
ISTORS ARE 1/4W. VJBS0243

JHF

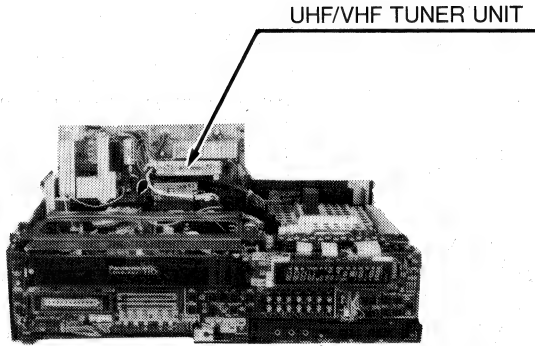
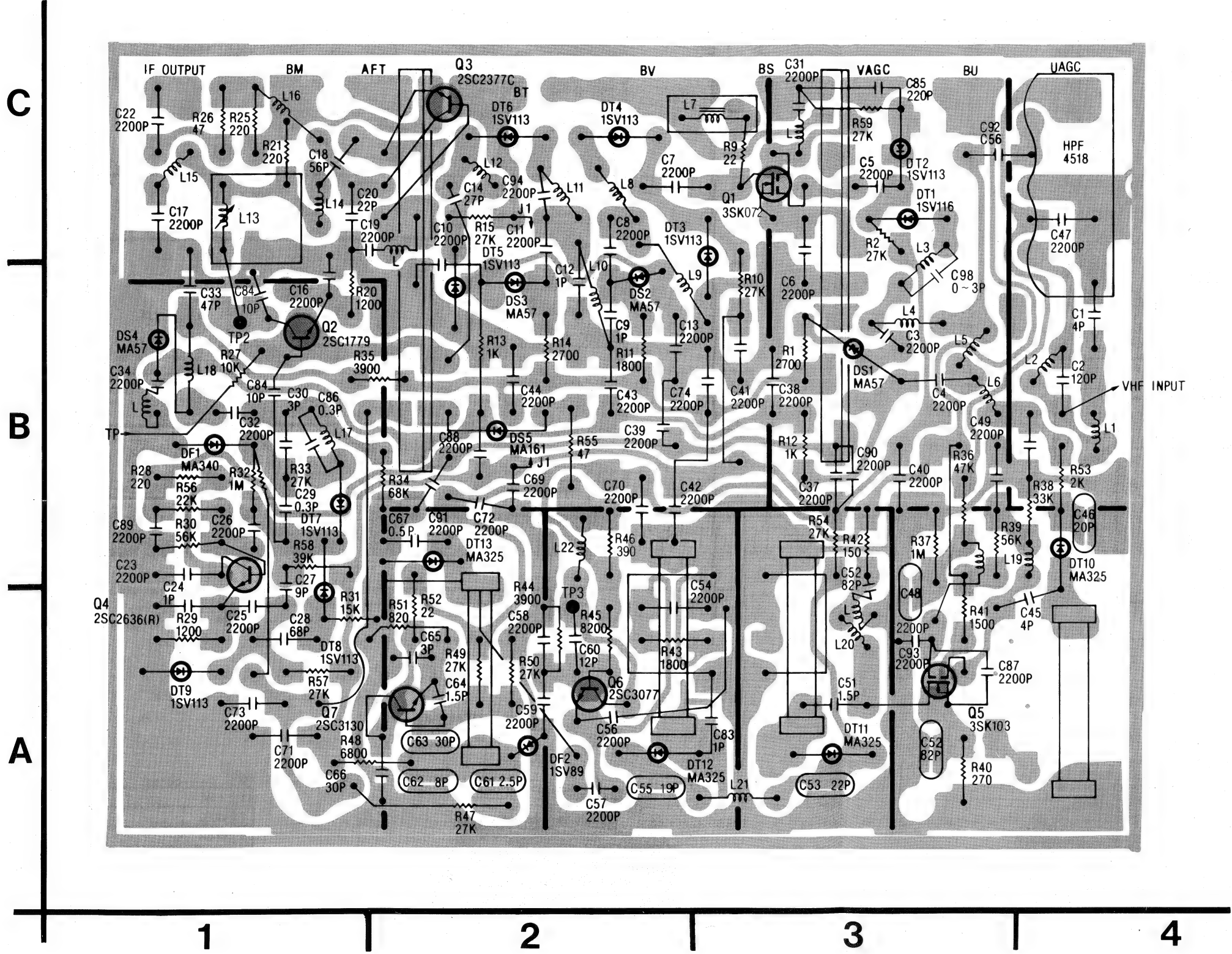
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



UHF/VHF TUNER UNIT TNV56751F2R

4-23
UHF/VHF TUNER
CIRCUIT

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

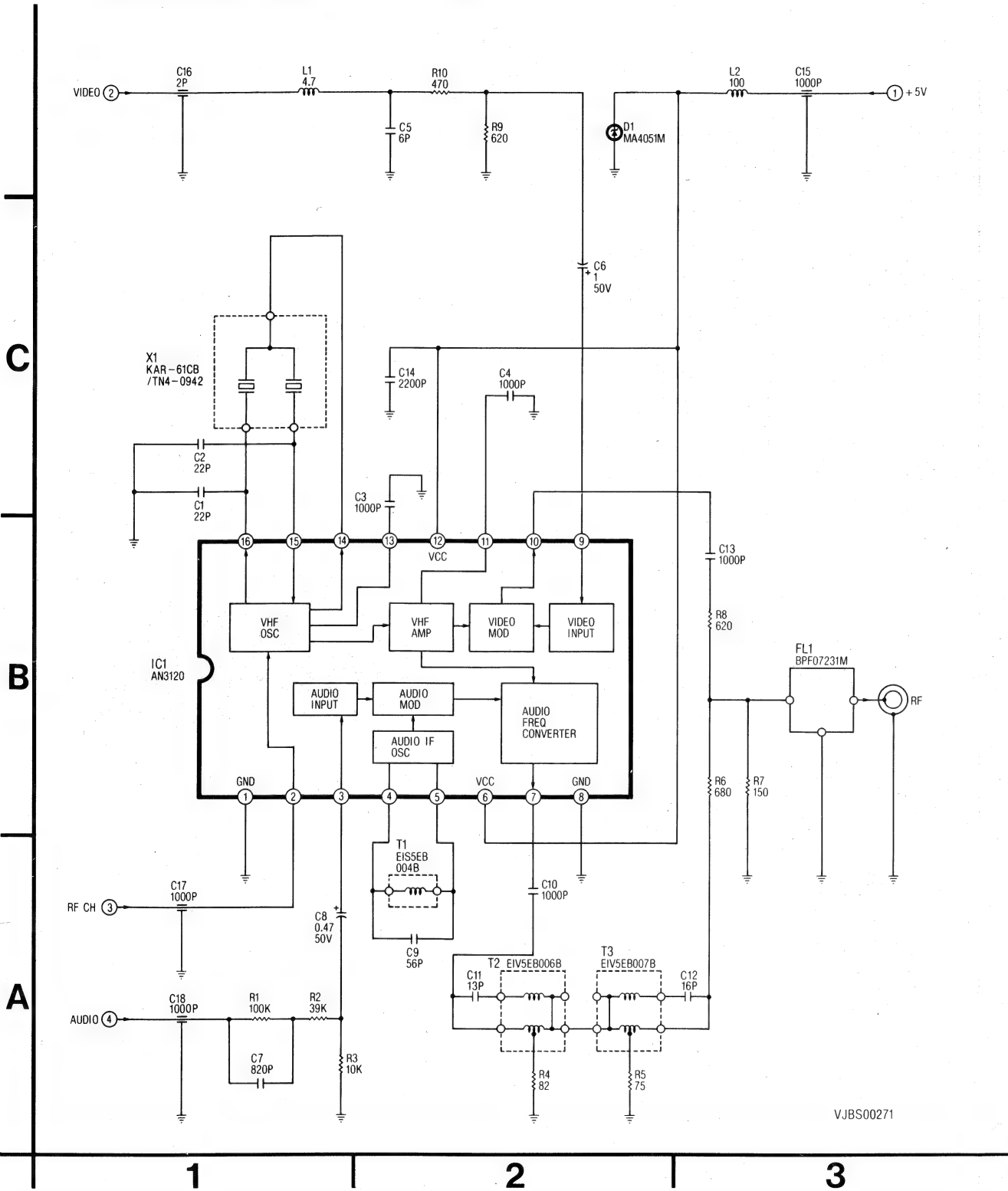


4-24
RF CONVERTER
CIRCUIT
(VEQS0252,
VEQS0253)

RF CONVERTER SCHEMATIC DIAGRAM

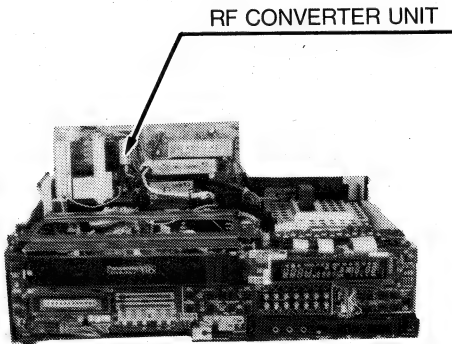
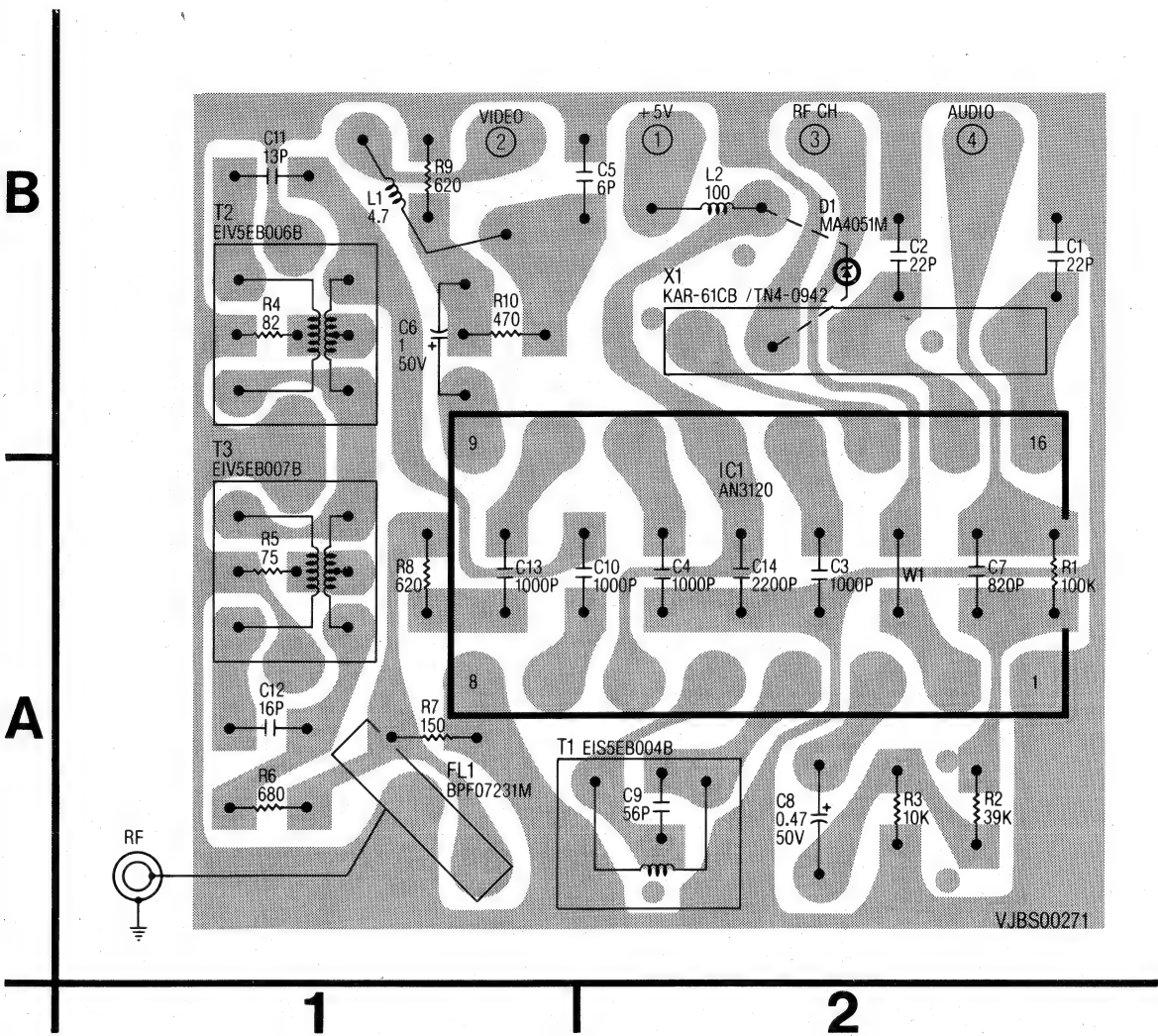
IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



RF CONVERTER UNIT VEQS0252

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

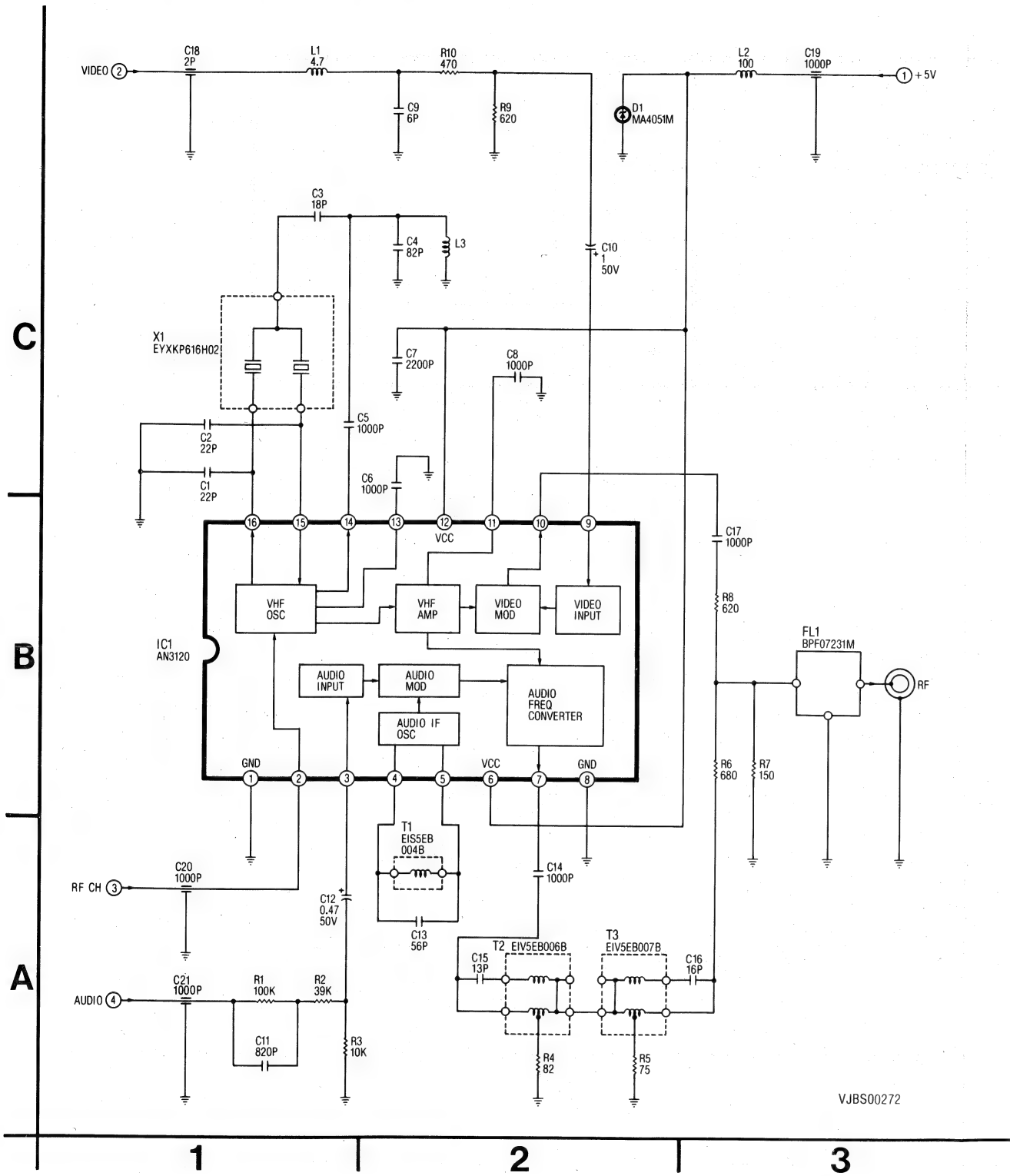


PIN	
1	+5V
2	VIDEO
3	RF CH
4	AUDIO

RF CONVERTER SCHEMATIC DIAGRAM

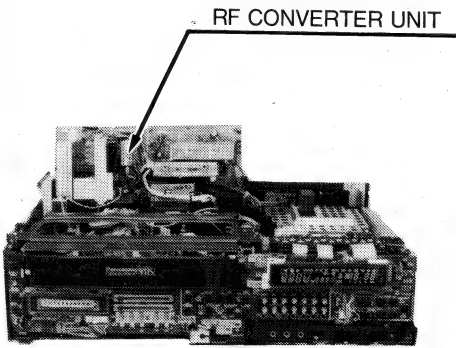
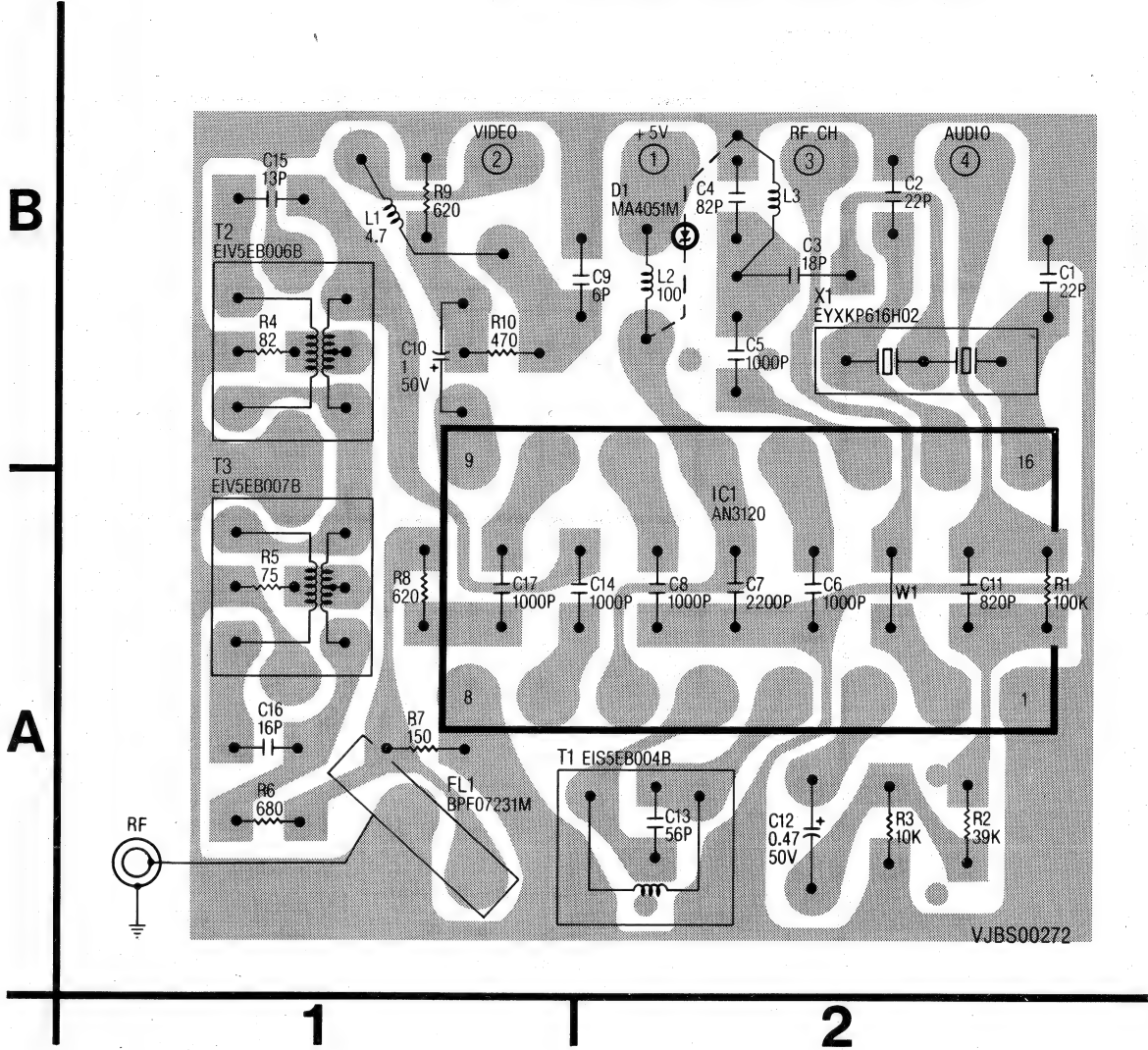
IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



RF CONVERTER UNIT VEQS0253

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

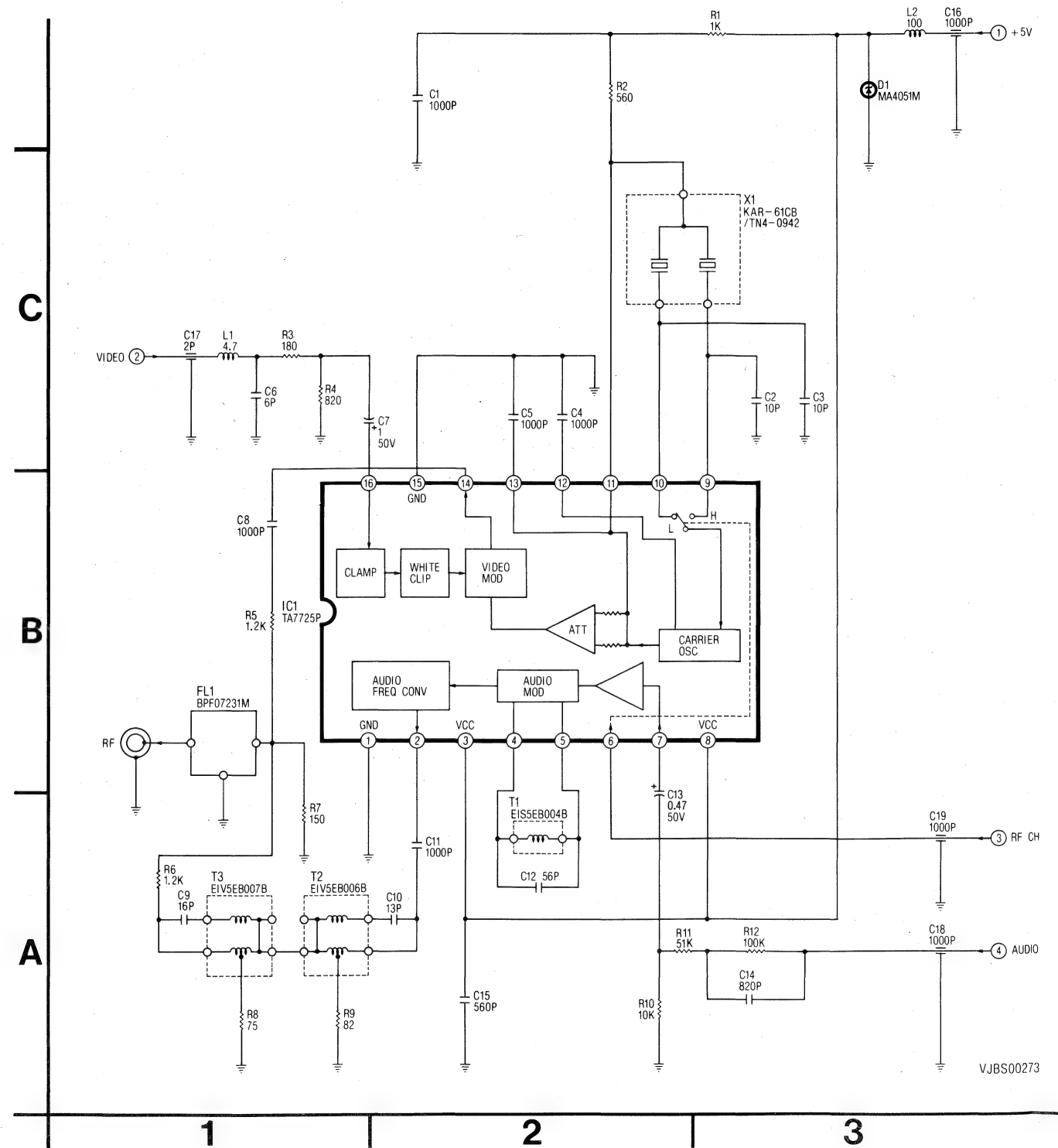


PIN	
1	+5V
2	VIDEO
3	RF CH
4	AUDIO

RF CONVERTER SCHEMATIC DIAGRAM

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

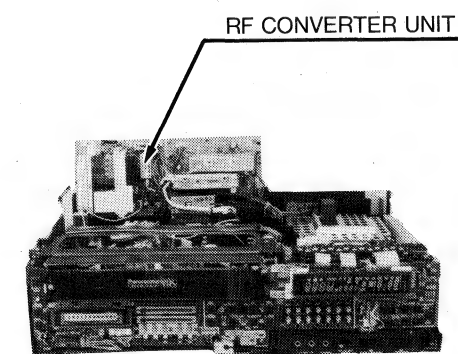
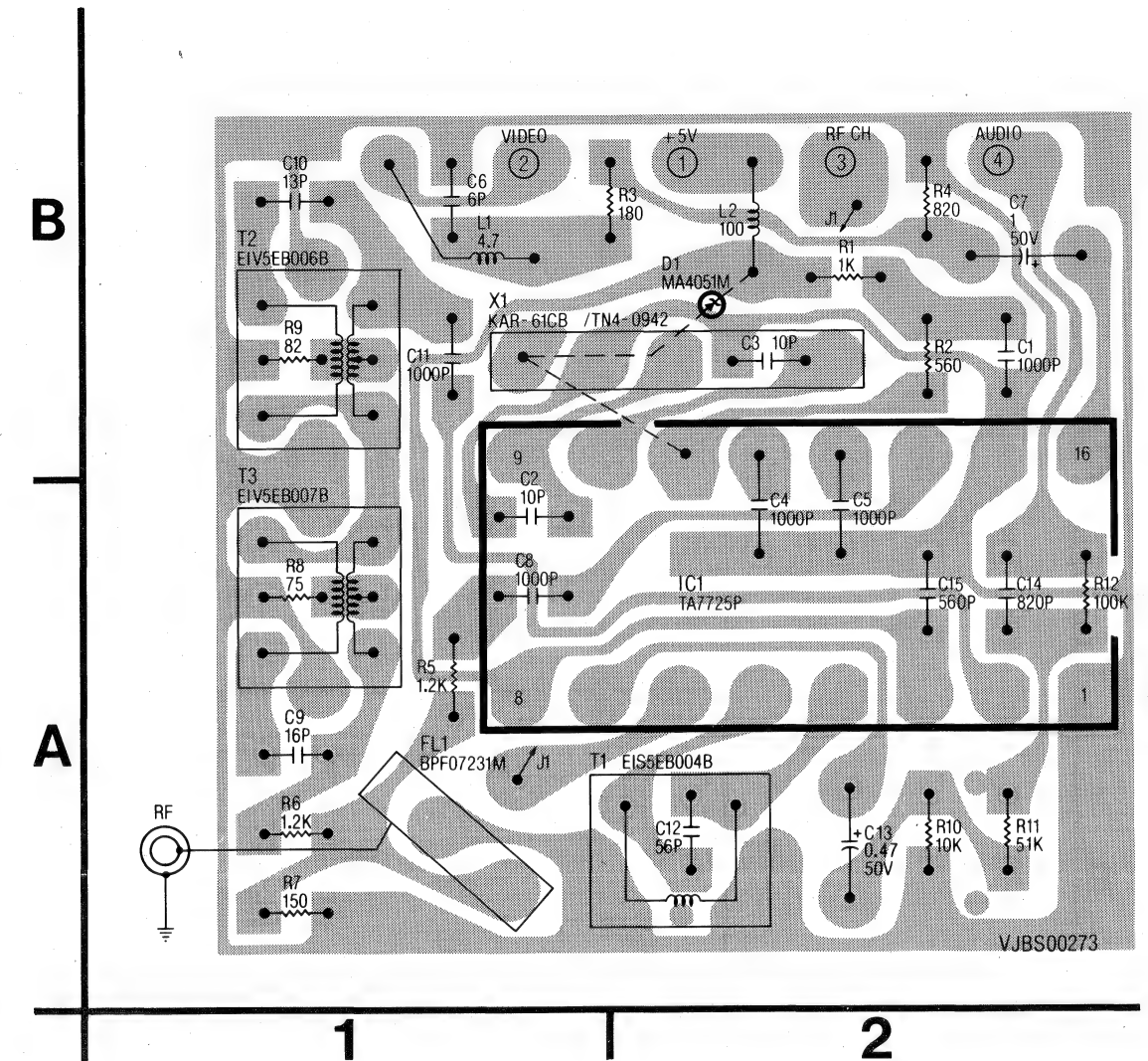
SPECIAL NOTE:
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RF CONVERTER UNIT VEQS0254

4-25
RF CONVERTER
CIRCUIT
(VEQS0254)

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.



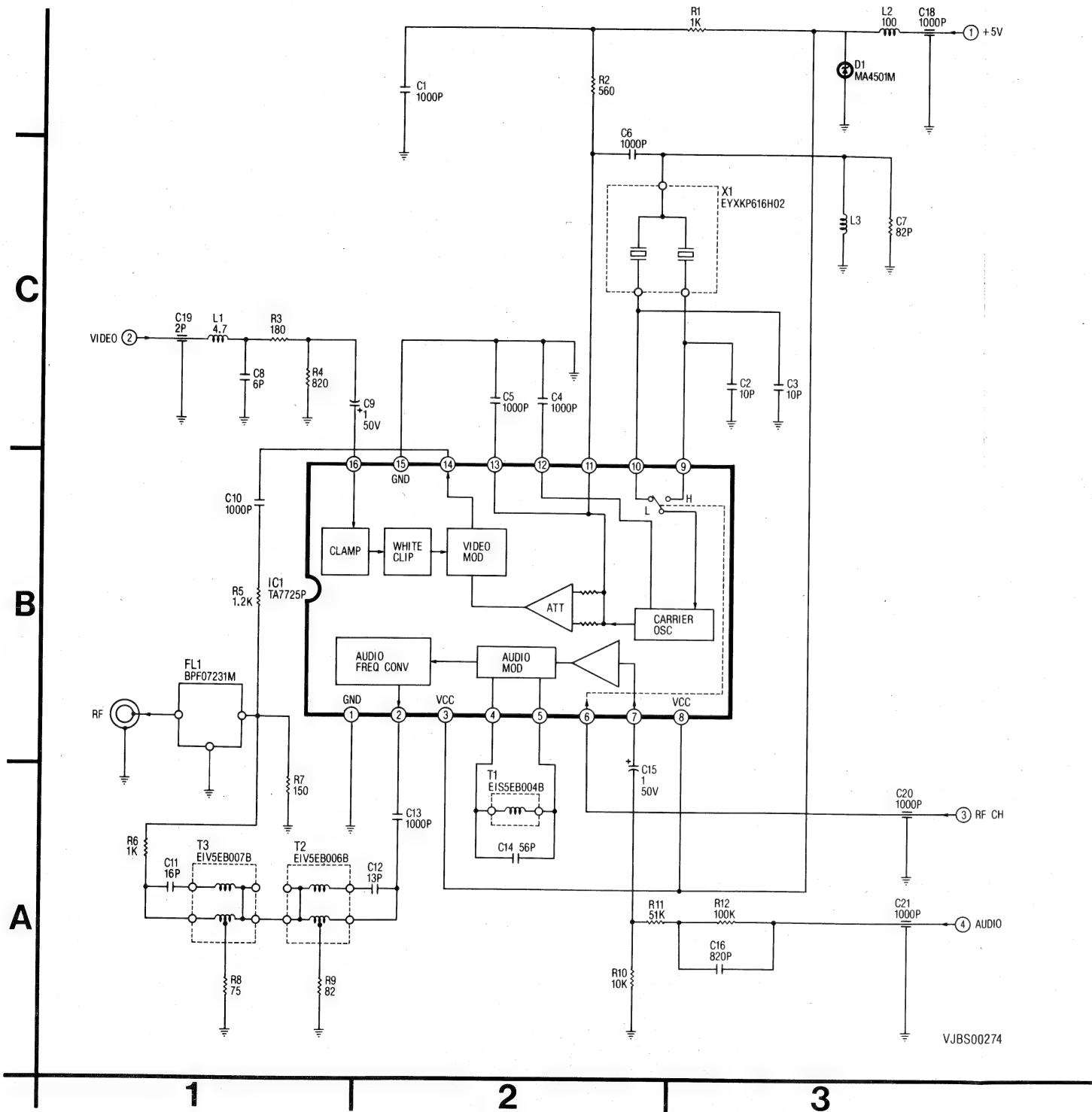
PIN	
1	+5V
2	VIDEO
3	RF CH
4	AUDIO

4-26
RF CONVERTER
CIRCUIT
(VEQS0255)

RF CONVERTER SCHEMATIC DIAGRAM

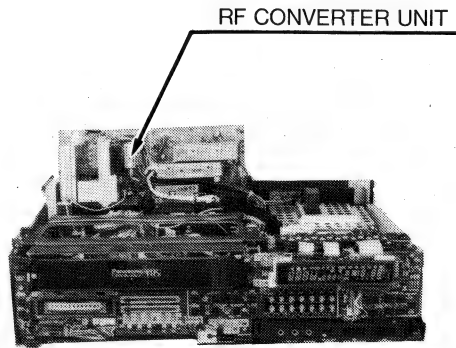
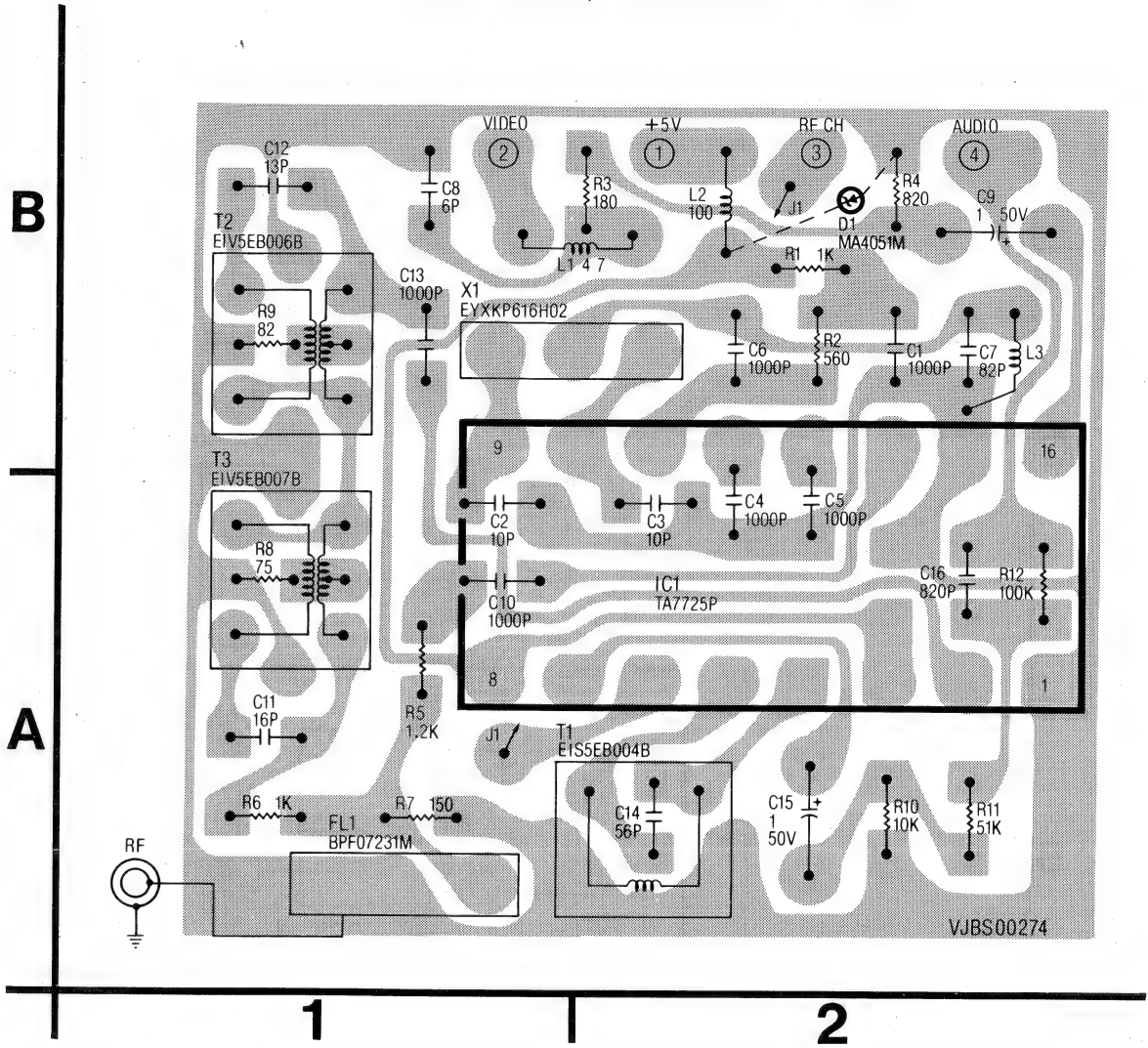
IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



RF CONVERTER UNIT VEQS0255

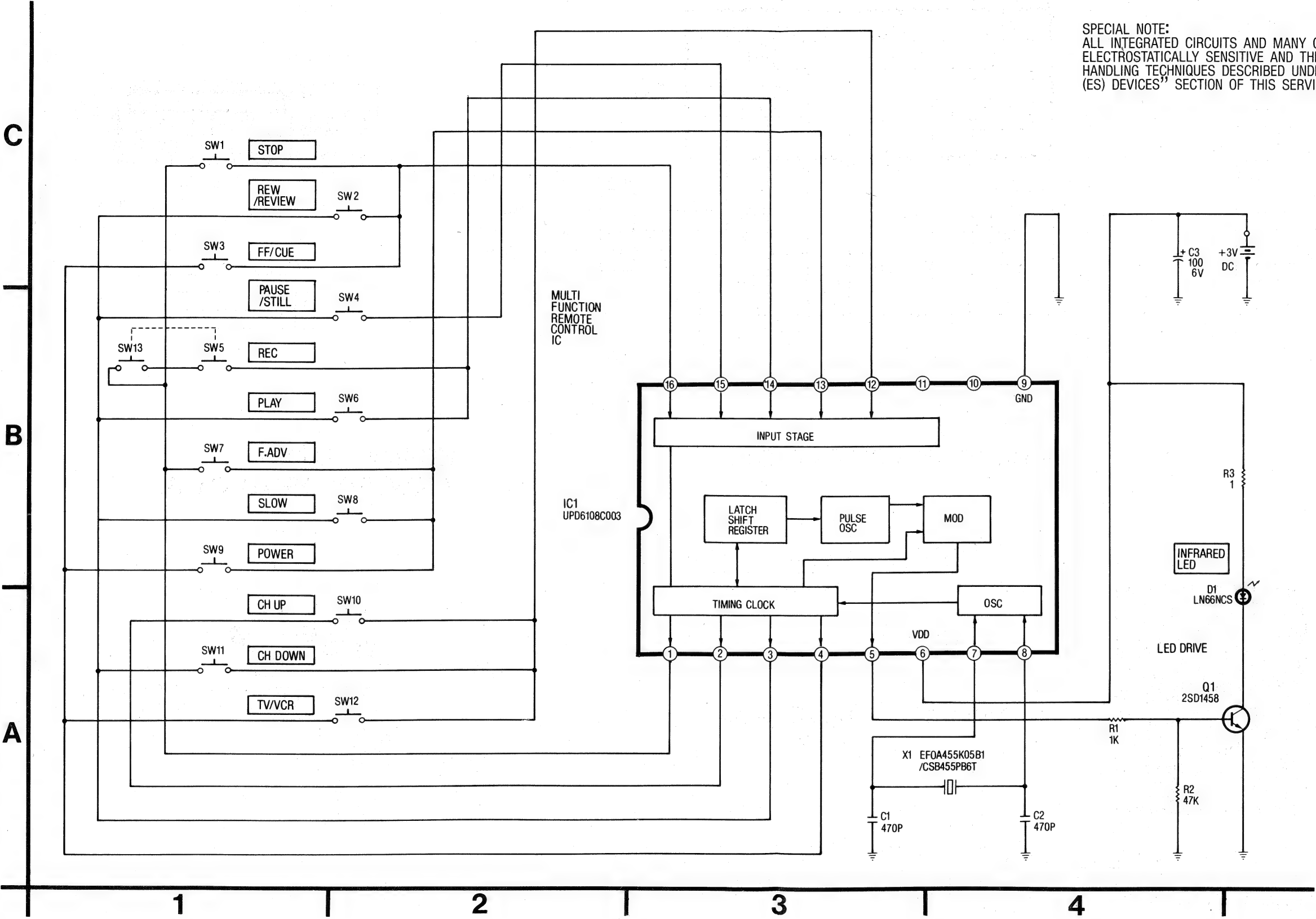
IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.



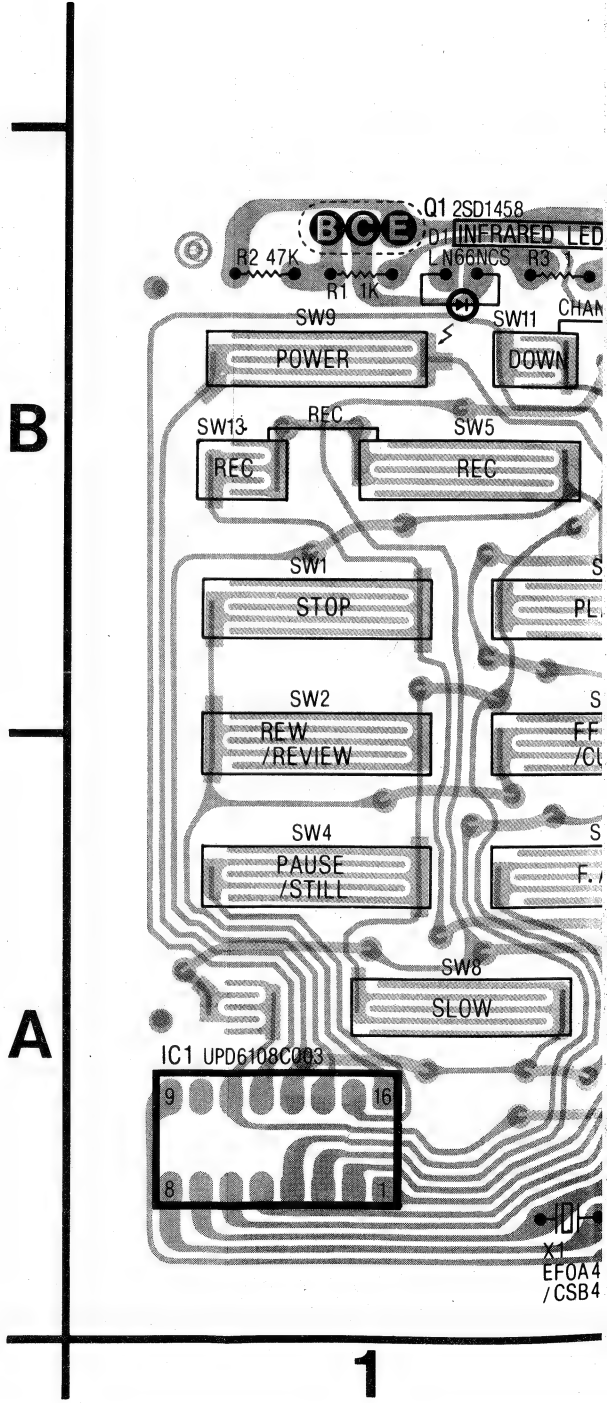
PIN	
1	+5V
2	VIDEO
3	RF CH
4	AUDIO

IR WIRELESS TRANSMITTER SCHEMATIC DIAGRAM

IR WIRELESS TRANSMITTER SCHEMATIC DIAGRAM



SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



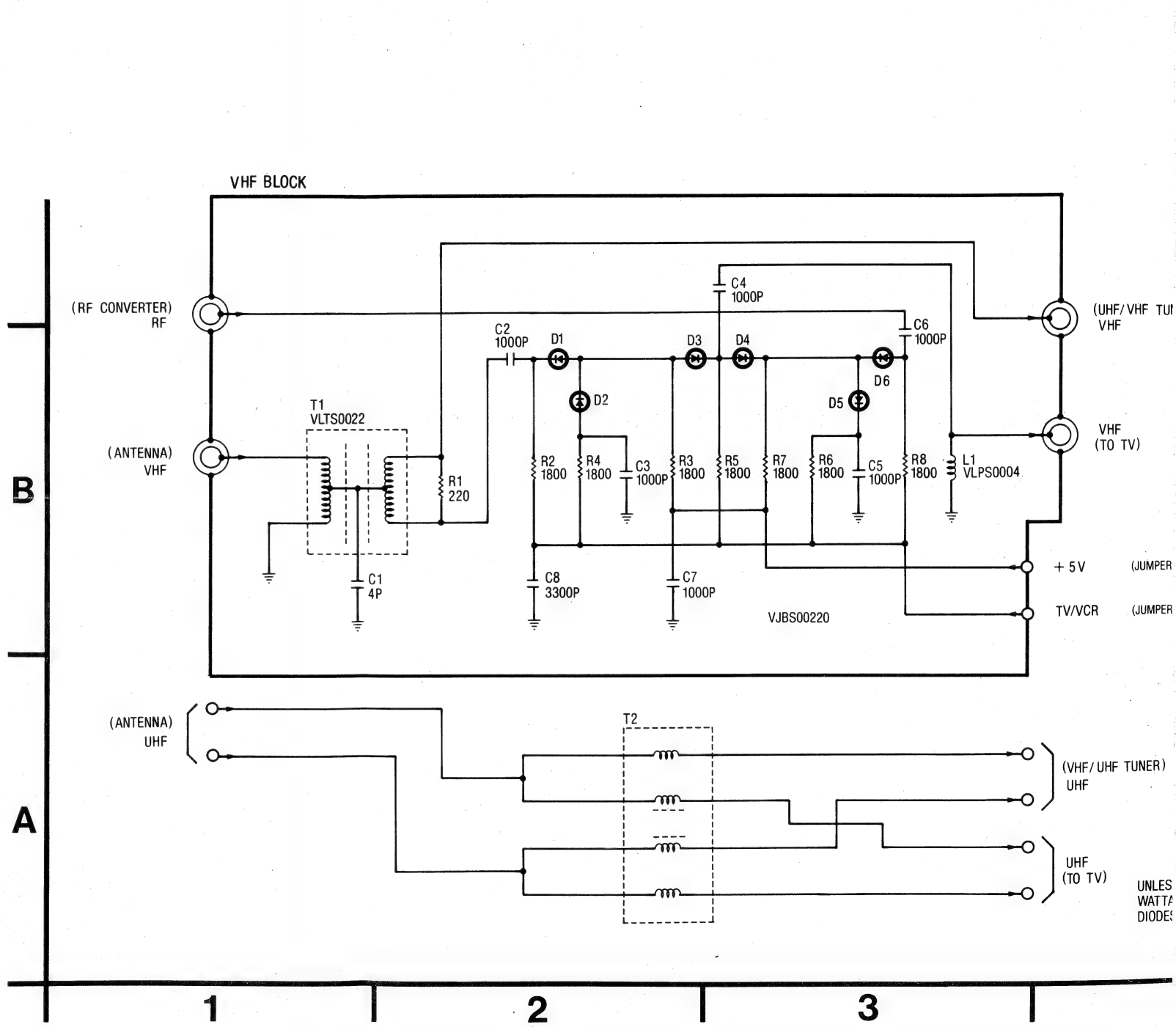
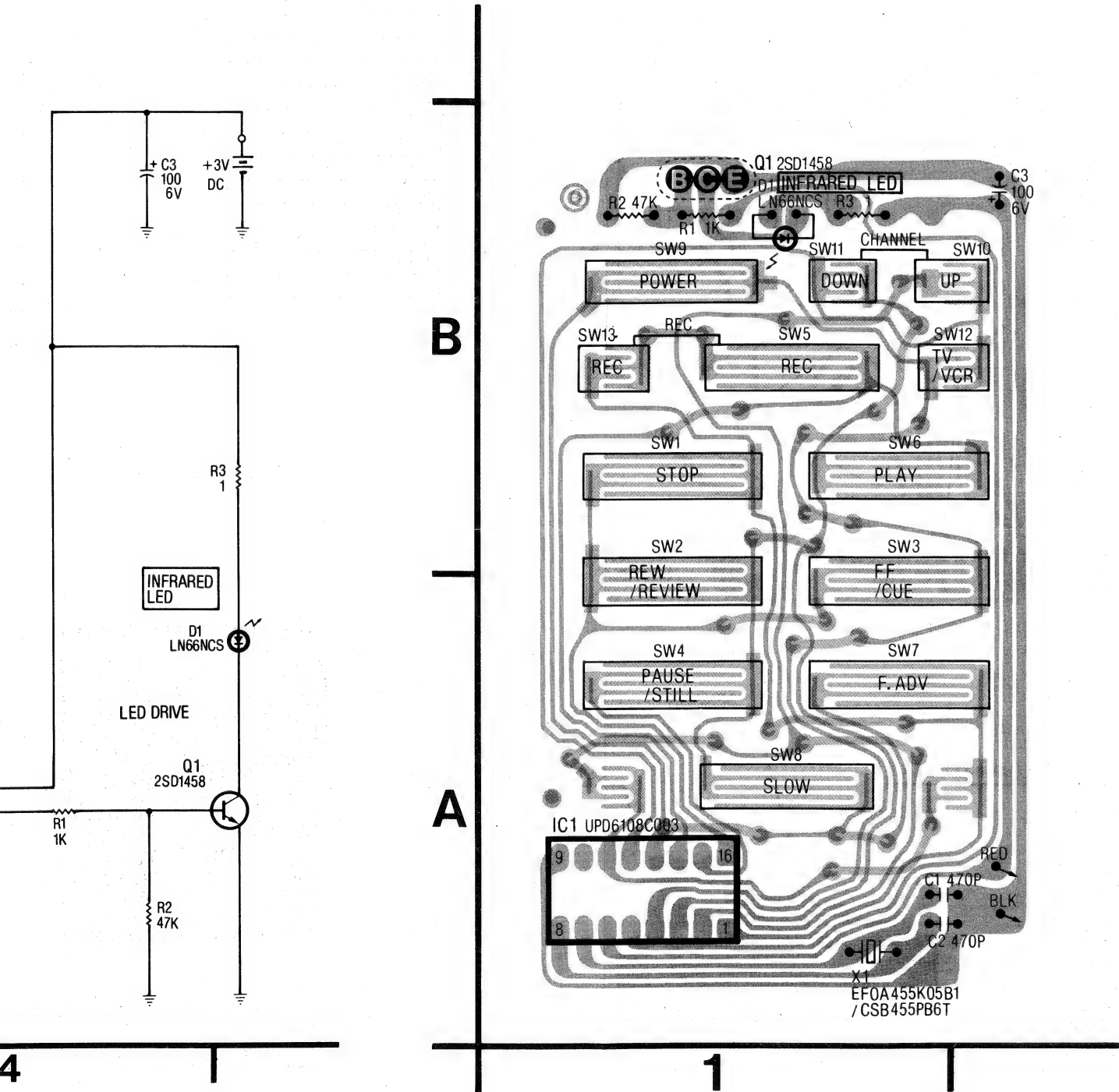
IR WIRELESS TRANSMITTER UNIT

ANTENNA TERMINAL SCHEMATIC DIAGRAM

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

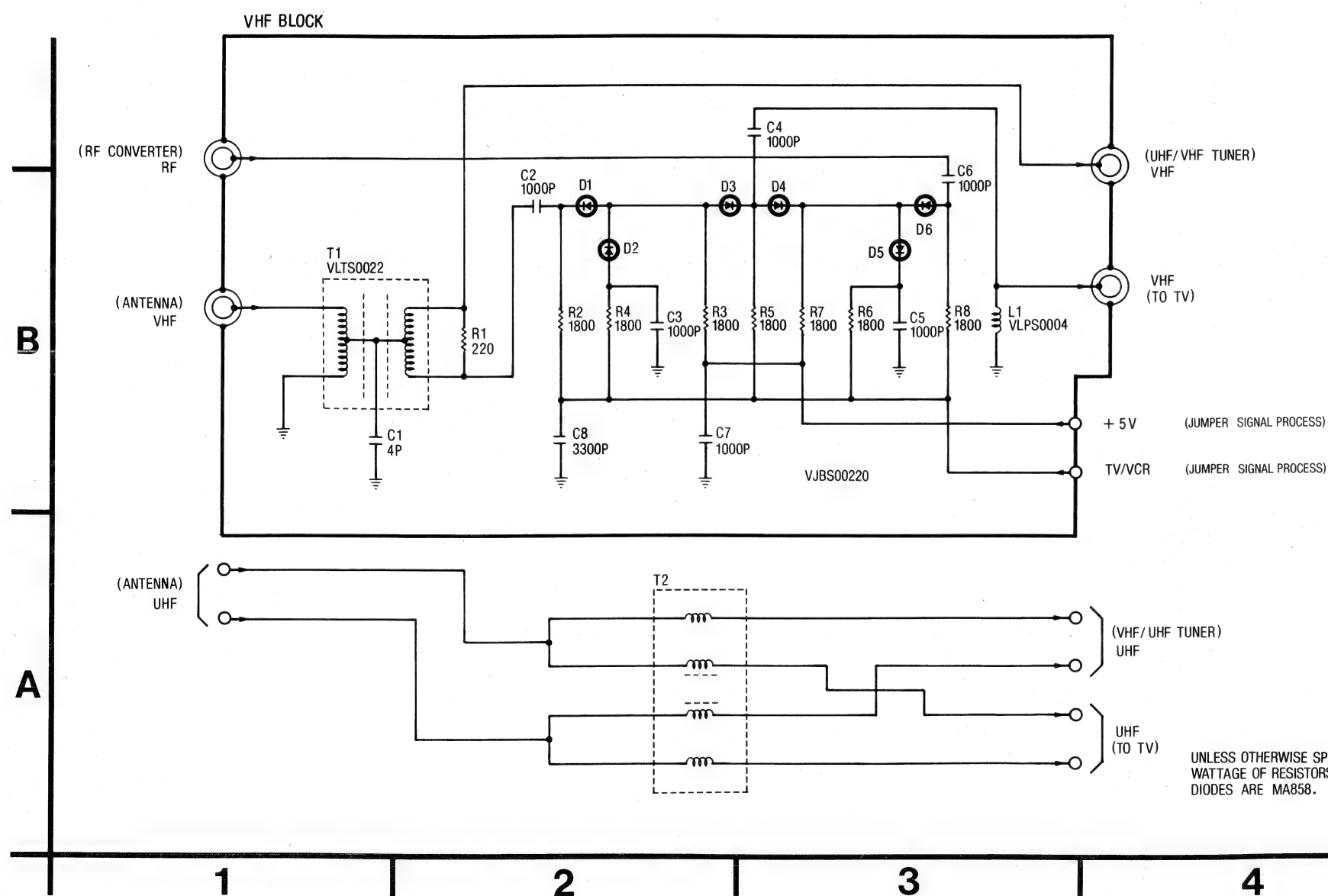
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMI ELECTROSTATICALLY SENSITIVE AND THEREFORE RE HANDLING TECHNIQUES DESCRIBED UNDER THE "EL (ES) DEVICES" SECTION OF THIS SERVICE MANUAL



ANTENNA TERMINAL SCHEMATIC DIAGRAM

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

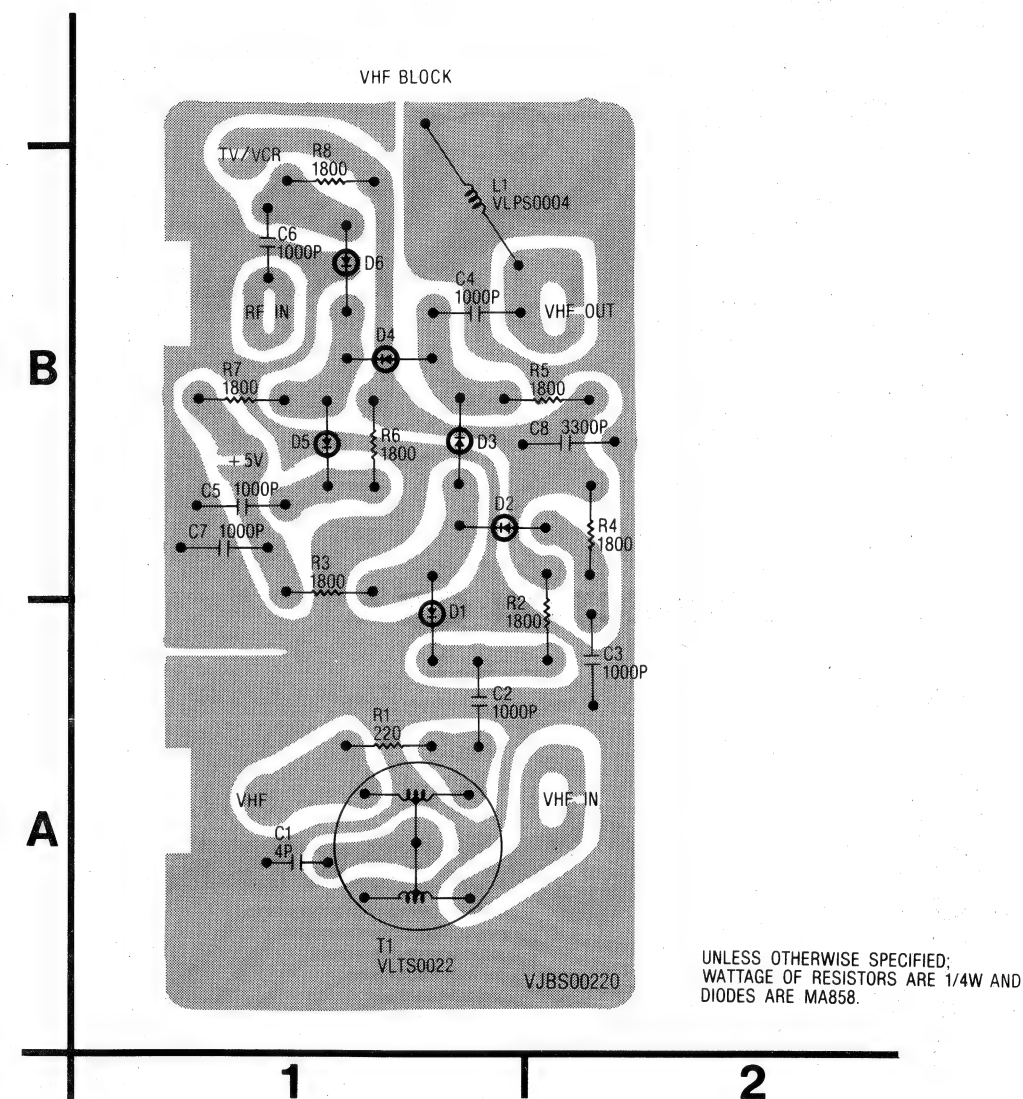
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



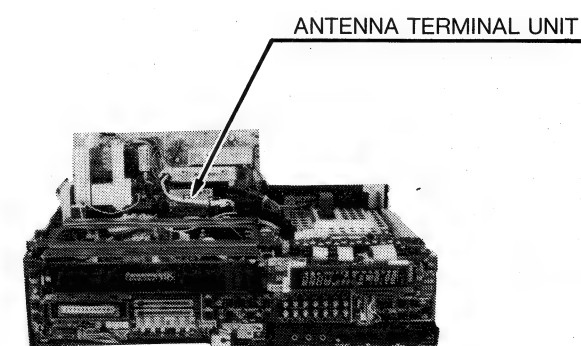
UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS ARE 1/4W AND
DIODES ARE MA858.

ANTENNA TERMINAL UNIT

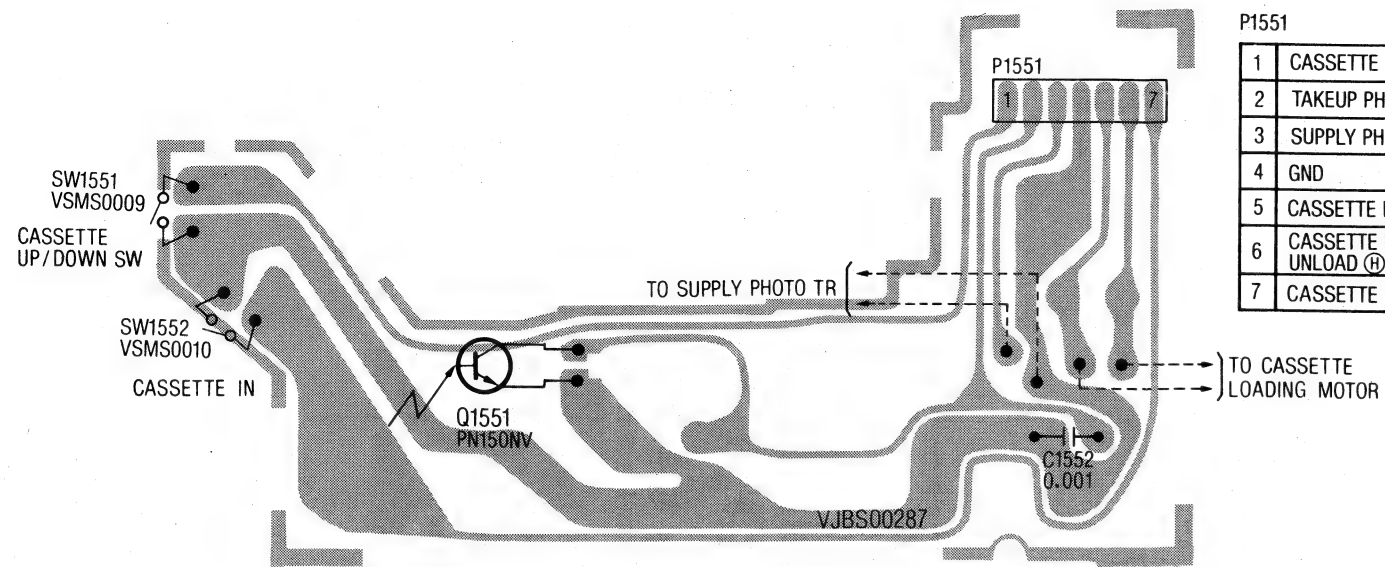
IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC
SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.



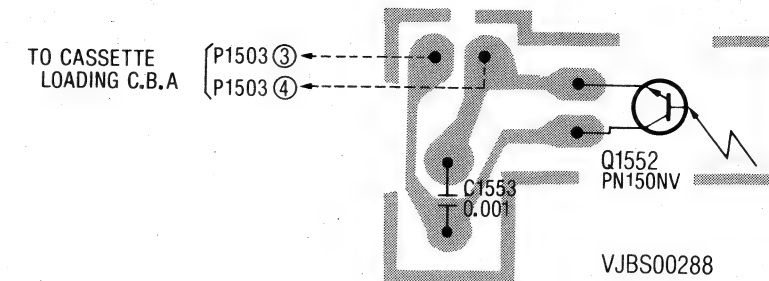
UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS ARE 1/4W AND
DIODES ARE MA858.



CASSETTE LOADING C.B.A.

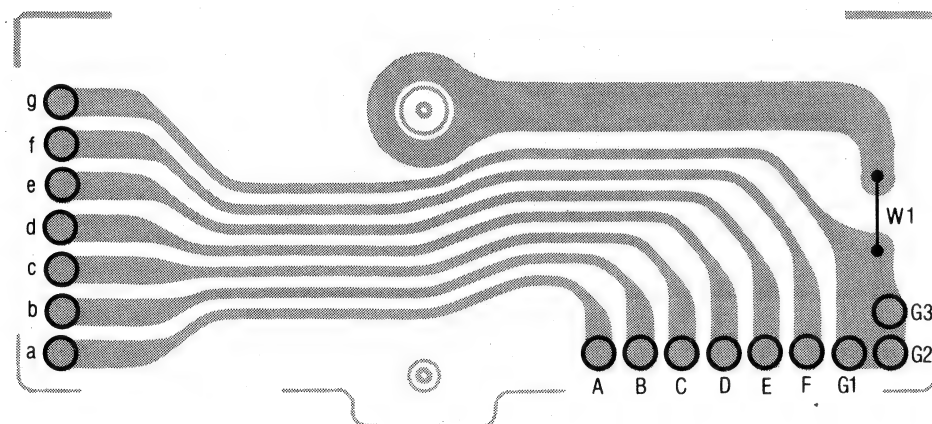


SUPPLY PHOTO TR C.B.A.



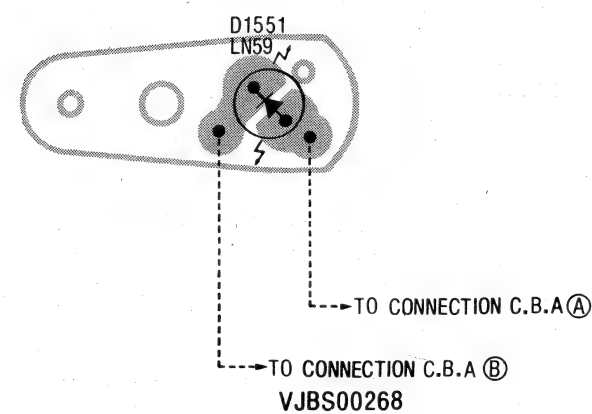
SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" SECTION OF THIS SERVICE MANUAL.

CONNECTION C.B.A.

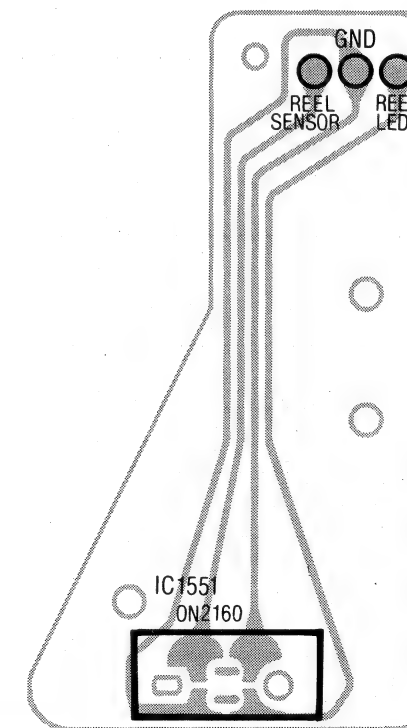


a	UNSWITCH +12V
b	SENSOR LED PULSE
c	DEW SENSOR
d	POSITION 2
e	POSITION 3
f	POSITION 1
g	GND

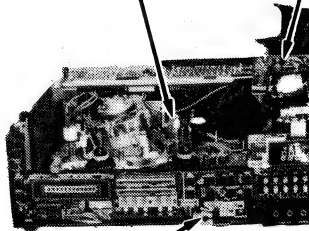
SENSOR LED C.B.A.



REEL SENSOR C.B.A. VEPS00269A



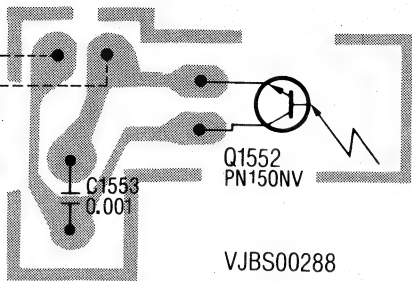
NORMAL AUDIO /CONTROL HEAD C.B.A.



IR WIRELESS RECEIVING

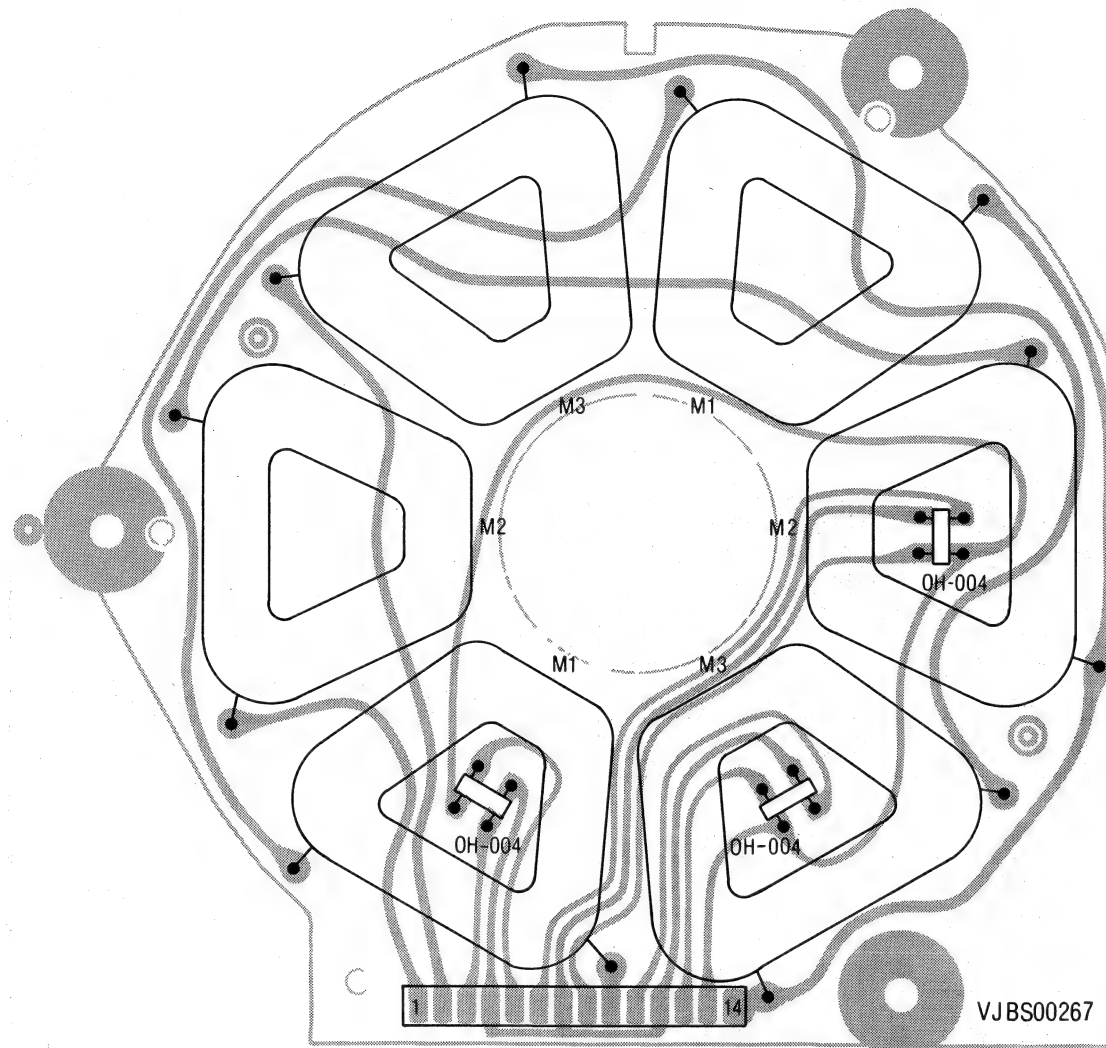
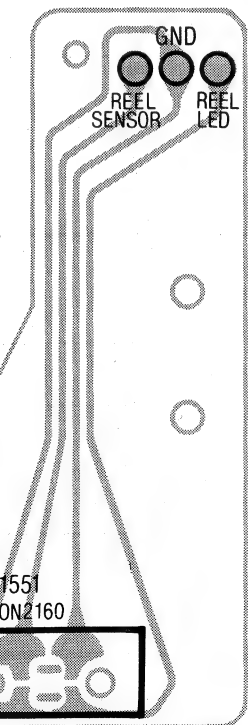
O TR C.B.A.

CAPSTAN STATOR COIL ASS'Y VEMS0058



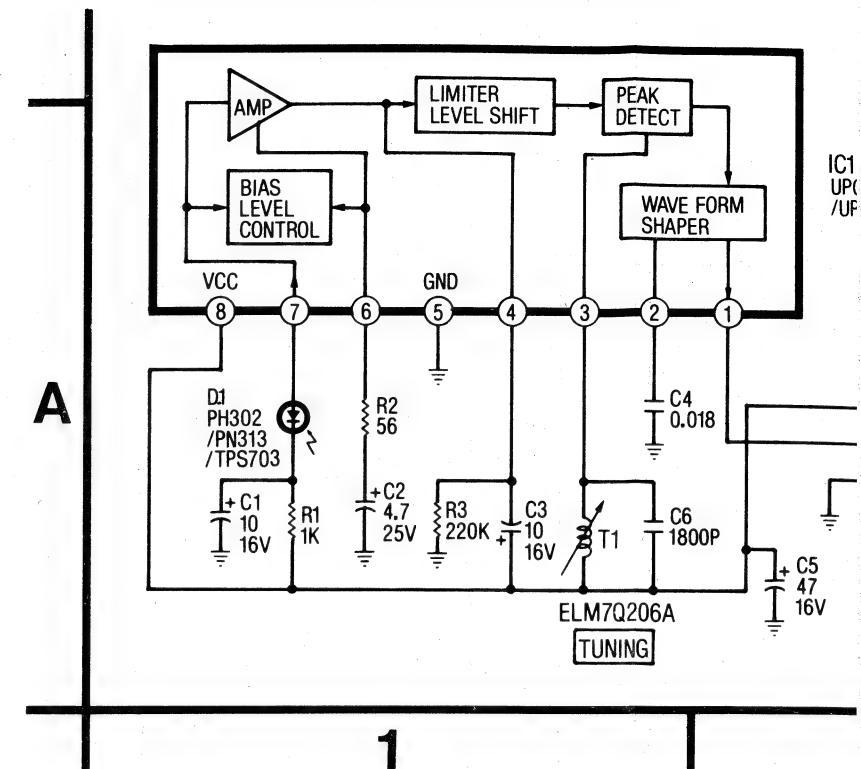
OTHER SEMICONDUCTOR DEVICES ARE
BEFORE REQUIRE THE SPECIAL
THE "ELECTROSTATICALLY SENSITIVE
MANUAL.

OR C.B.A. VEPS00269A

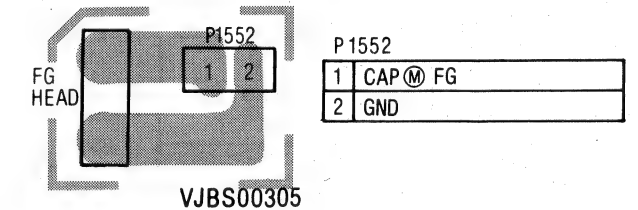


1	MAIN COIL 2
2	MAIN COIL 3
3	H3 -
4	
5	H3 +
6	H1 -
7	
8	H1 +
9	MAIN COIL 1
10	H2 -
11	VH +
12	H2 +
13	VH -
14	

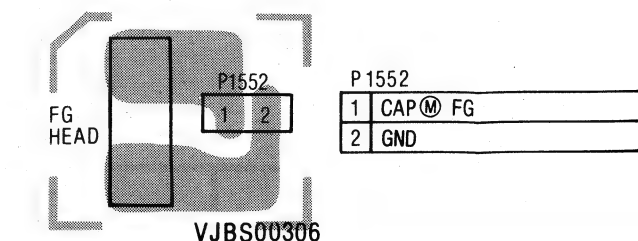
IR WIRELESS RECEIVING DETEC SCHEMATIC DIAGRAM



CAPSTAN FG HEAD C.B.A.



CAPSTAN FG HEAD C.B.A.



NORMAL AUDIO
/CONTROL HEAD C.B.A.

CASSETTE LOADING C.B.A.

SENSOR LED C.B.A.

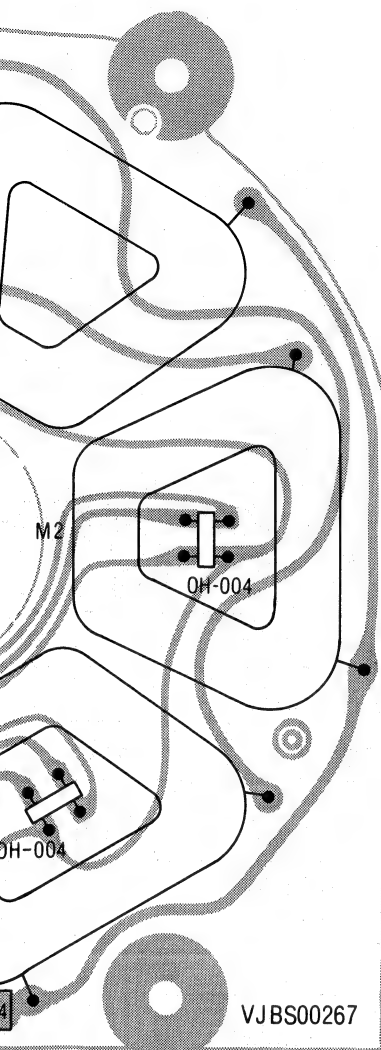
SUPPLY PHOTO TR C.B.A.

CAPSTAN FG HEAD C.B.A.

CAPSTAN STATOR COIL ASS'Y

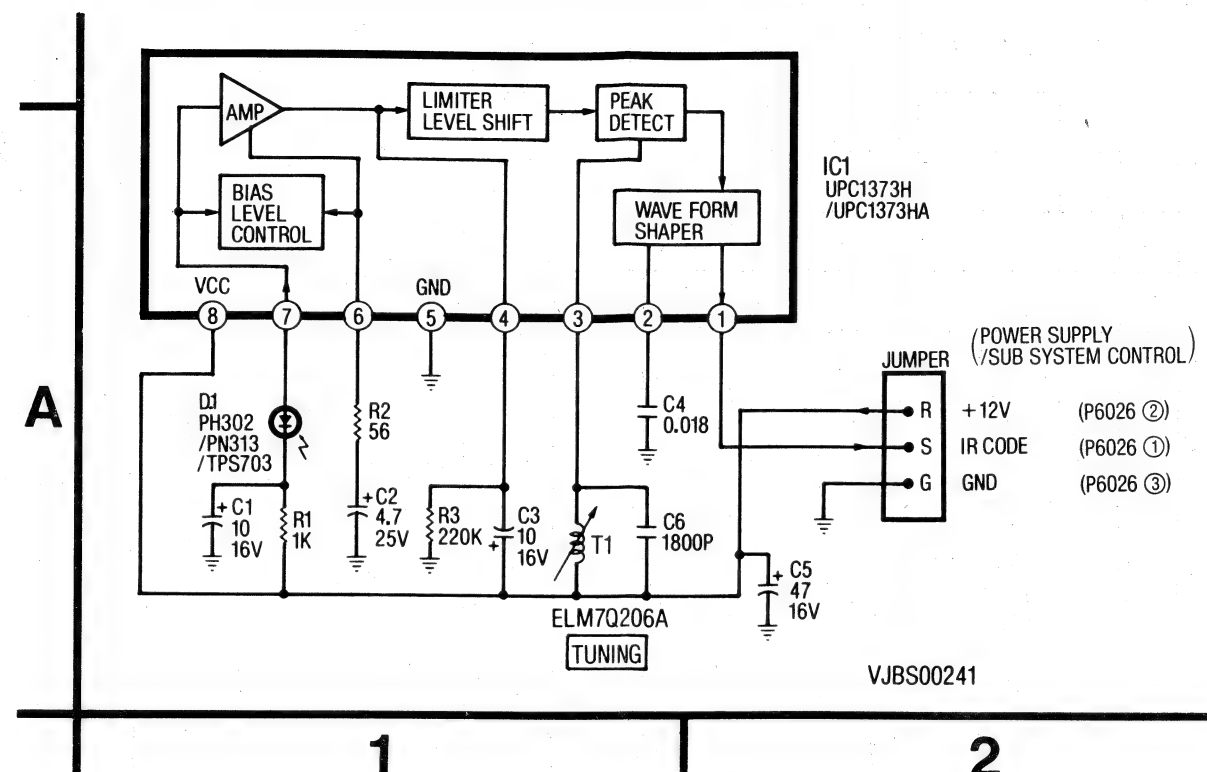
CONNECTION C.B.A.

IR WIRELESS RECEIVING DETECTOR UNIT

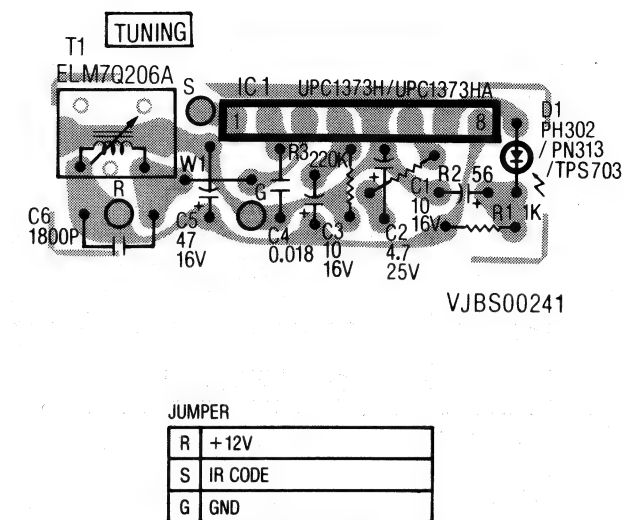


1	MAIN COIL 2
2	MAIN COIL 3
3	H3 -
4	
5	H3 +
6	H1 -
7	
8	H1 +
9	MAIN COIL 1
10	H2 -
11	VH +
12	H2 +
13	VH -
14	

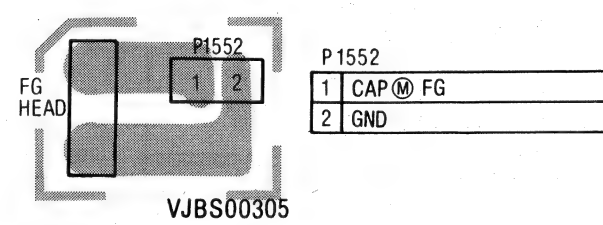
IR WIRELESS RECEIVING DETECTOR SCHEMATIC DIAGRAM



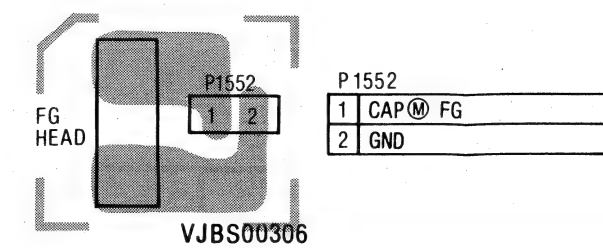
IR WIRELESS RECEIVING DETECTOR UNIT VEQS0276



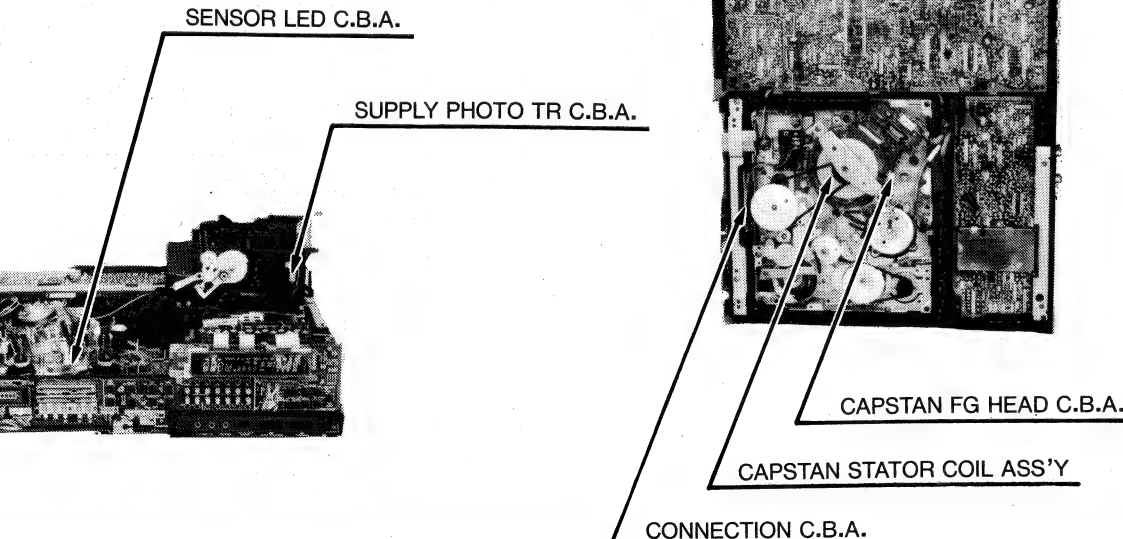
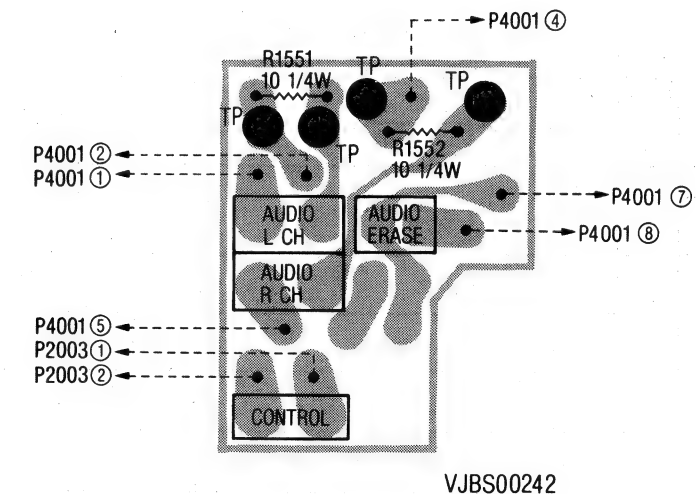
CAPSTAN FG HEAD C.B.A.



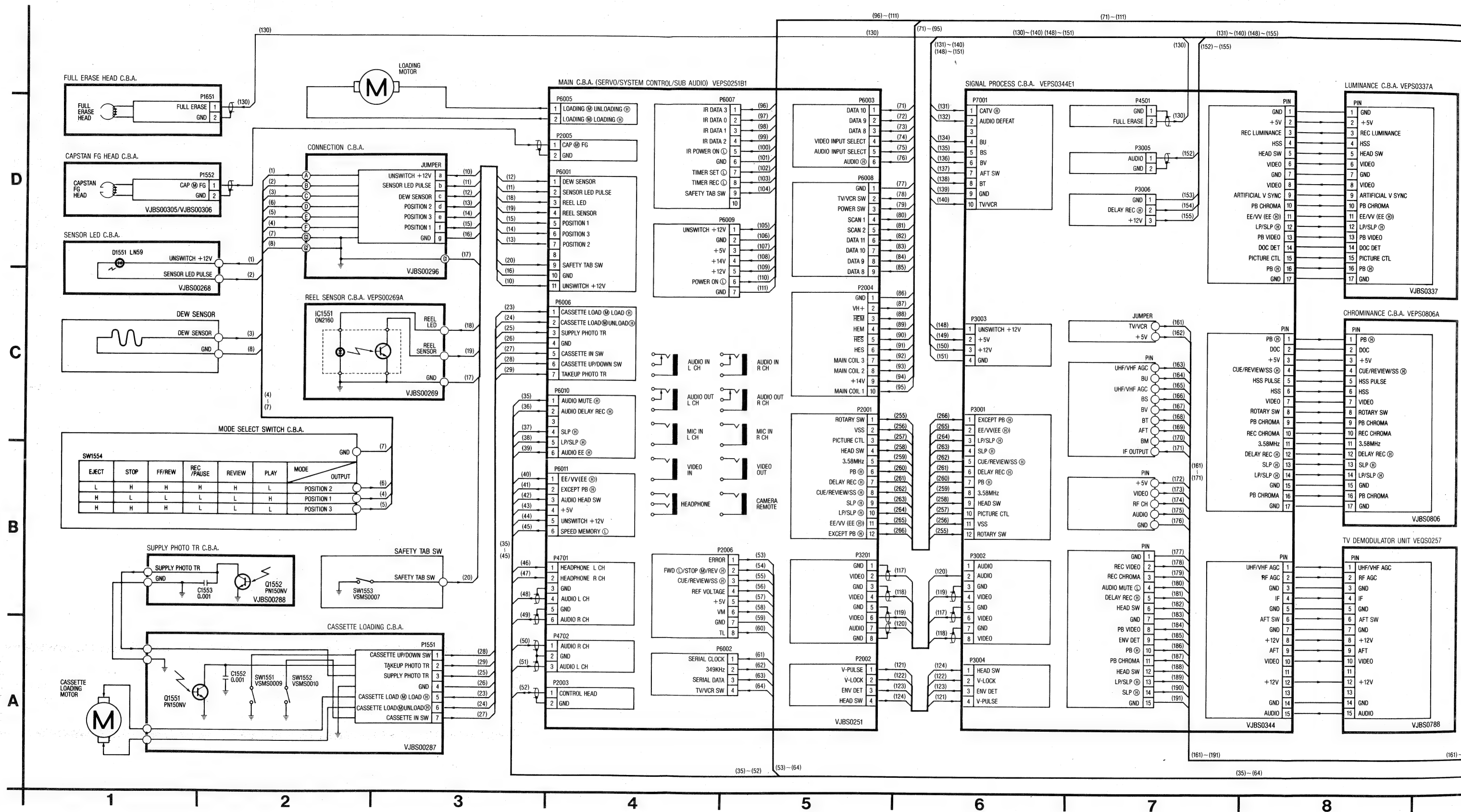
CAPSTAN FG HEAD C.B.A.



NORMAL AUDIO /CONTROL HEAD C.B.A.

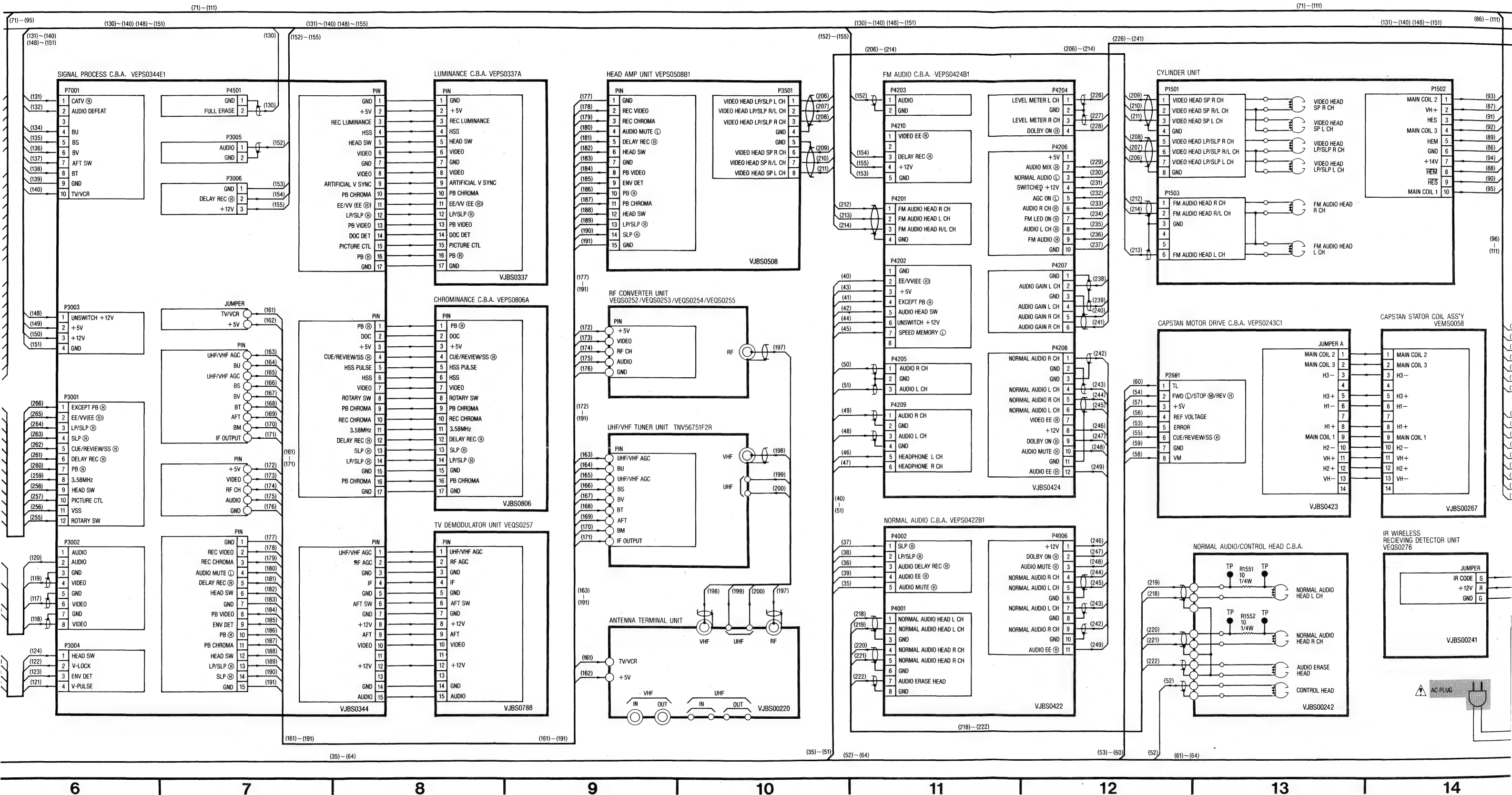


INTERCONNECTION SCHEMATIC DIAGRAM



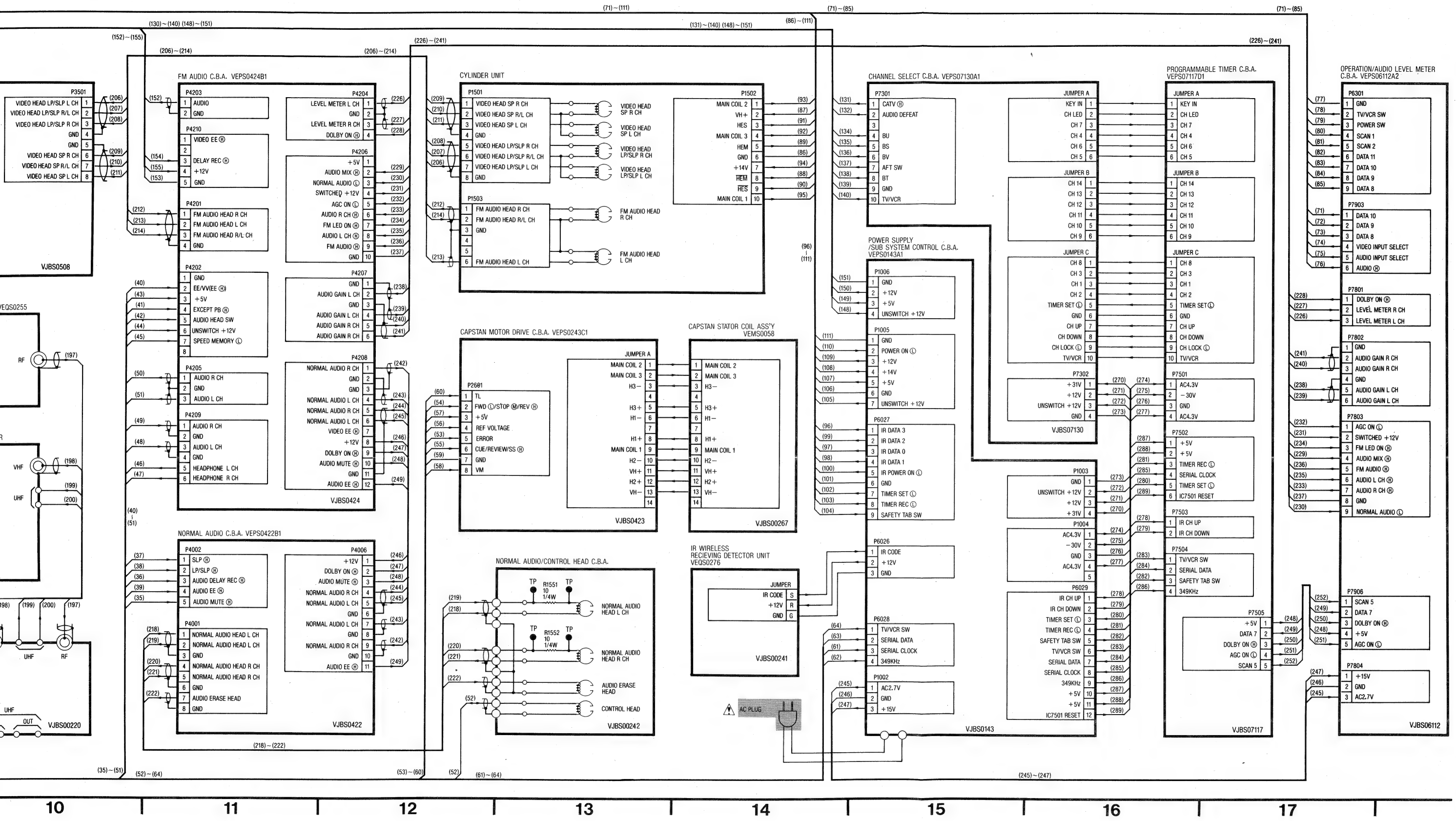
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚡ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

SPECIAL NOTE:
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE
ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL
HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE
(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



NOTICE:
READ BY THE SIGN HAVE
ELECTRICAL SAFETY.
OF THESE COMPONENTS, USE
CAUTION.

SPECIAL NOTE:
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(ES) DEVICES" SECTION OF THIS SERVICE MANUAL.



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MECHANICAL REPLACEMENT PARTS LIST	5-11
ELECTRICAL REPLACEMENT PARTS LIST	5-15

IMPORTANT SAFETY NOTICE

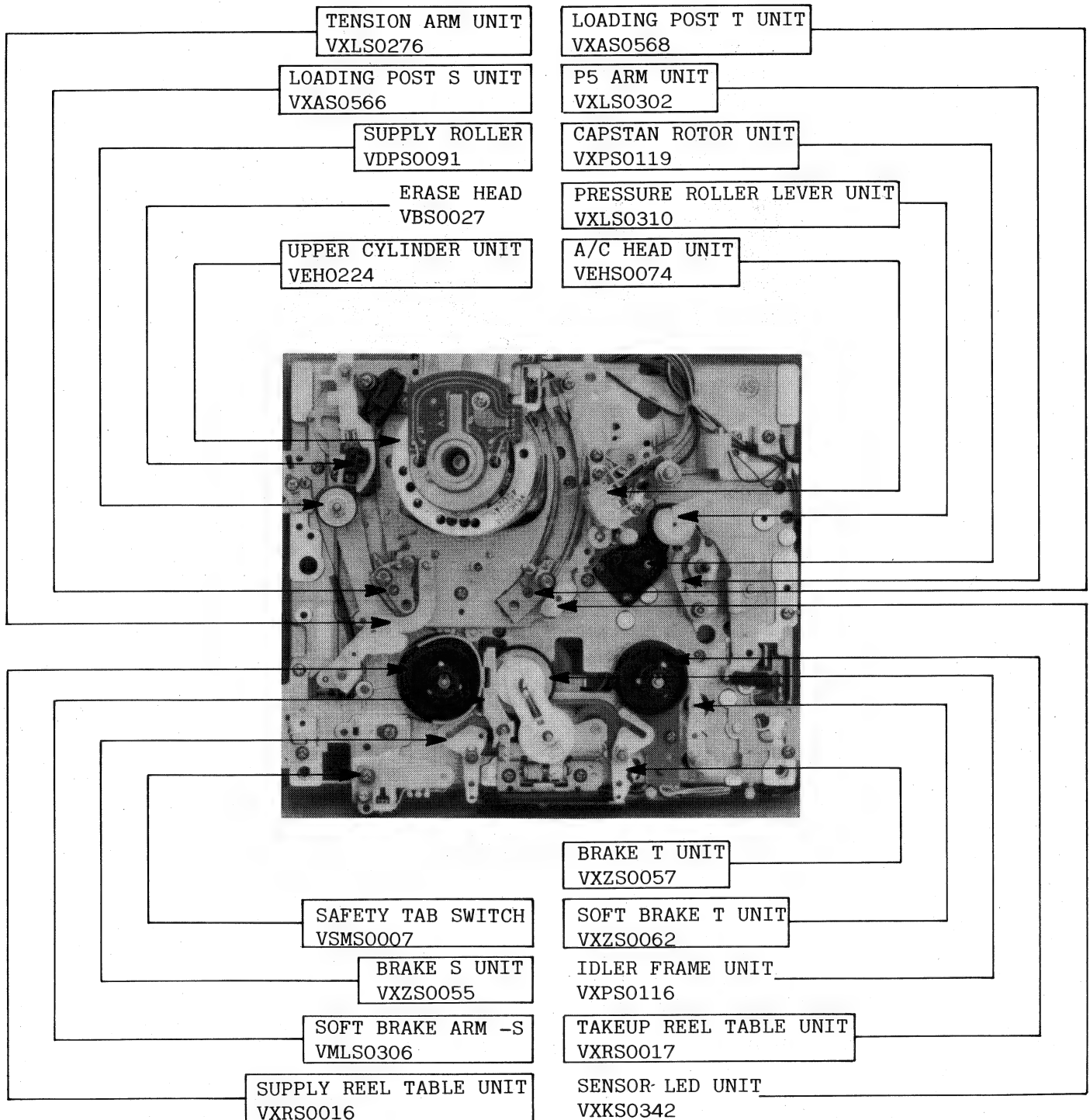
There are special components used in this equipment which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

INNER PARTS LOCATION

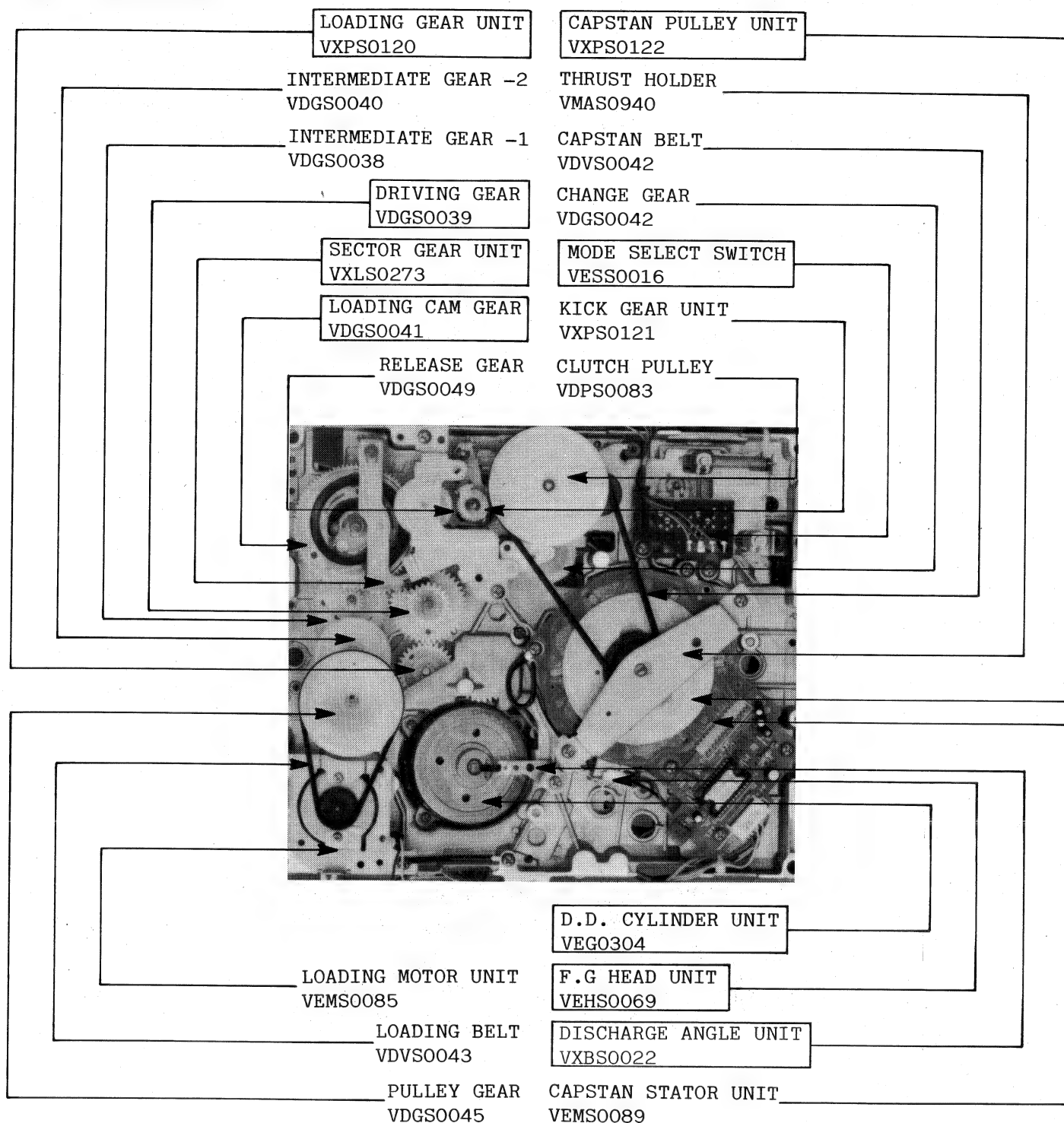
TOP VIEW

Note:

When the mechanical parts surrounded by rectangle are removed or replaced, be sure to perform necessary adjustment or confirmation procedures according to the mechanical adjustment procedures section.



BOTTOM VIEW

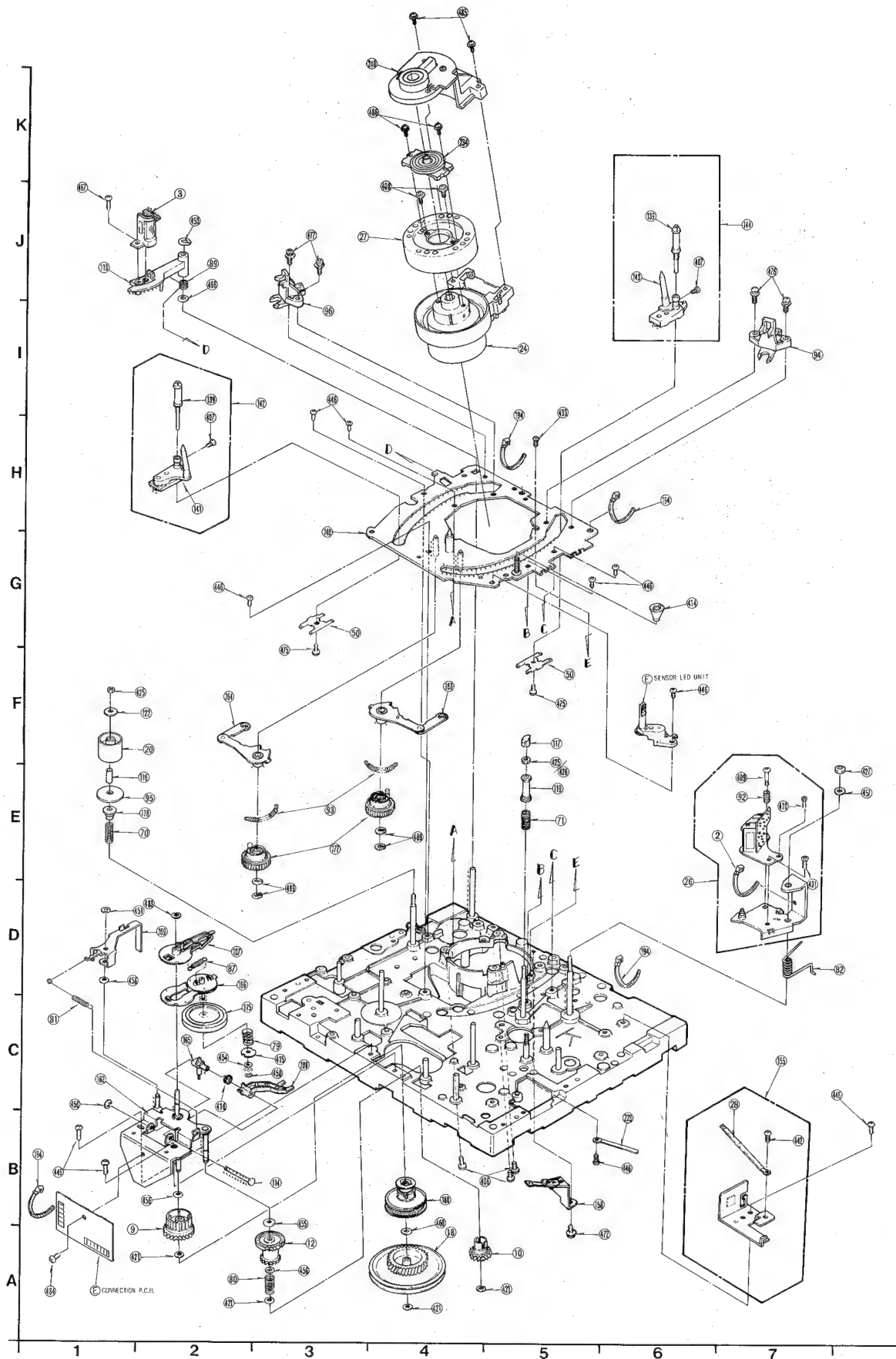


LUBRICATION POINTS

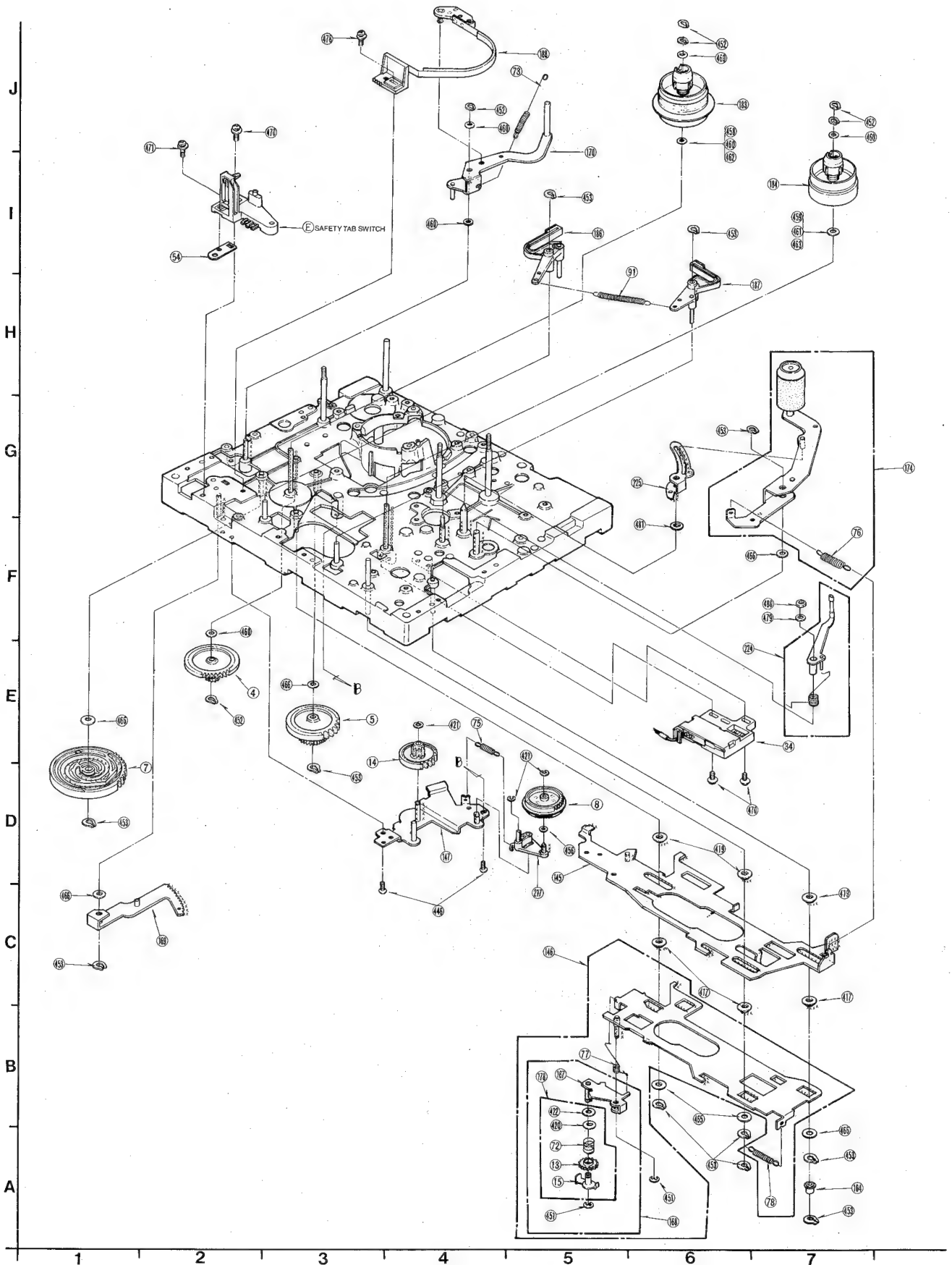
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Marks	Kind of Lubricant	Availability	Part Number
XXX	Molytone Grease	Available From Factory	MOR265
OOO	Spindle Oil	Purchase From Local Supplier
△△△	Gummed Adhesive	Purchase From Local Supplier

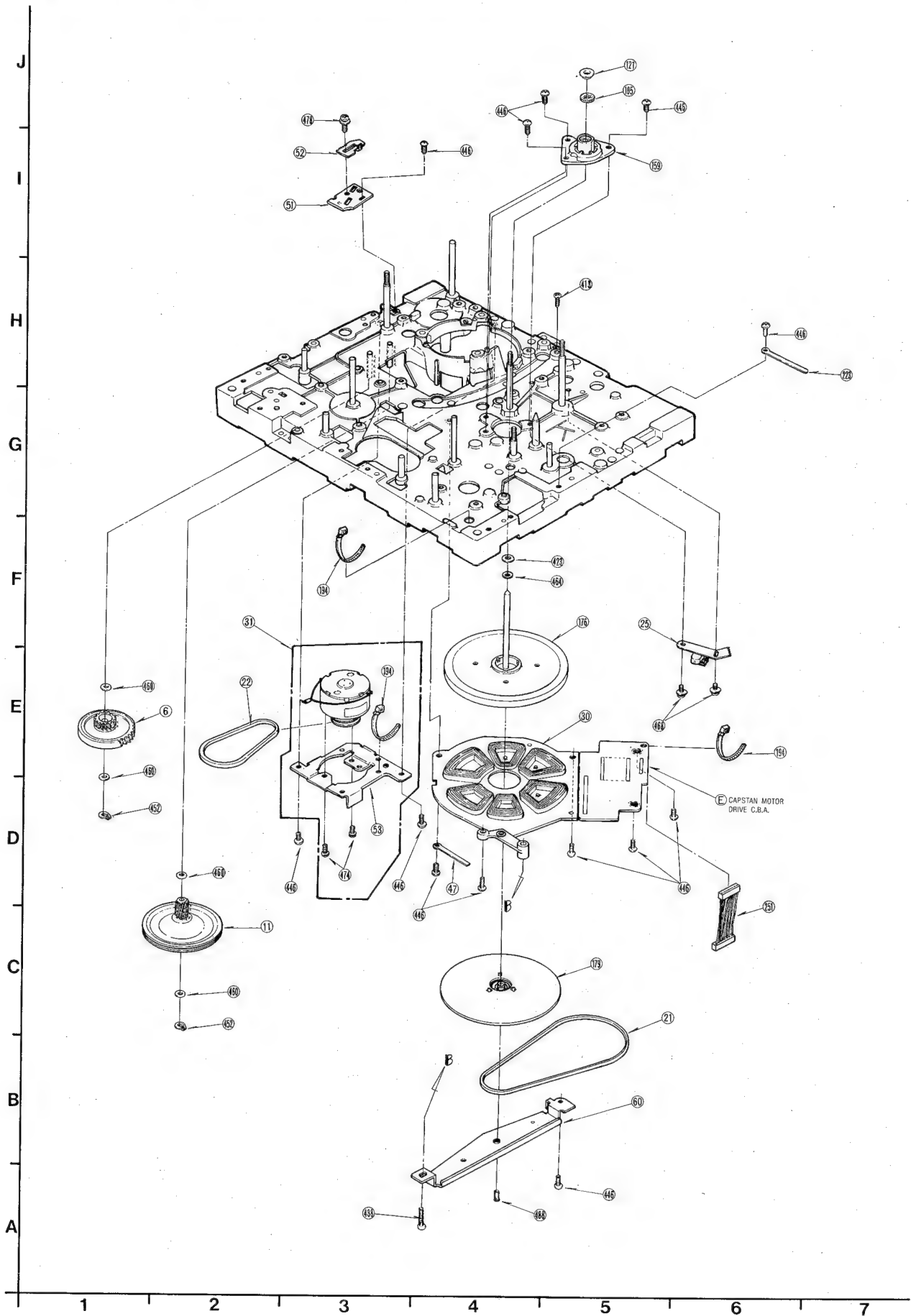
EXPLODED VIEWS ① Transport Section



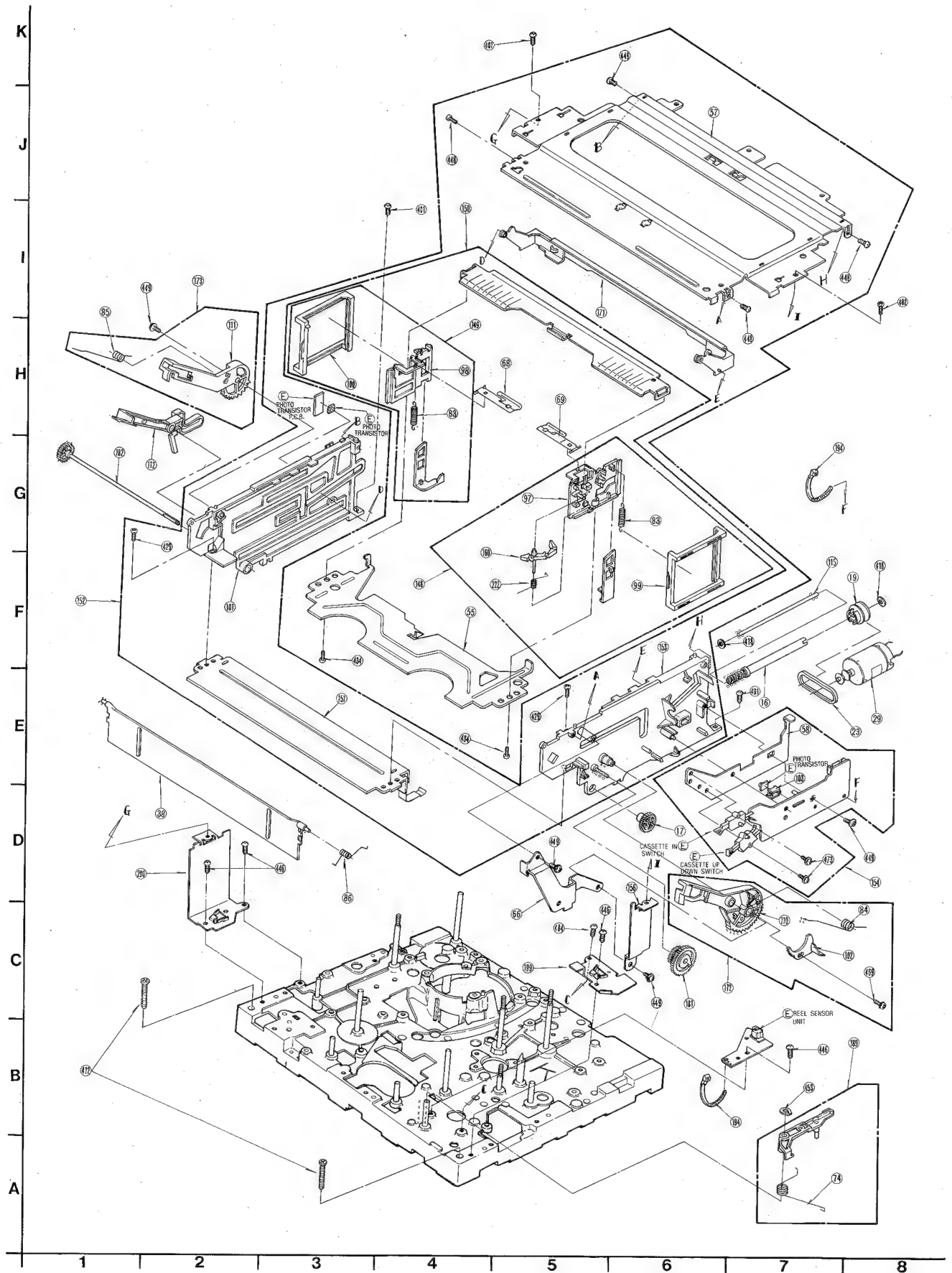
2 Moving Mechanism Section-(1)




3 Moving Mechanism Section-(2)

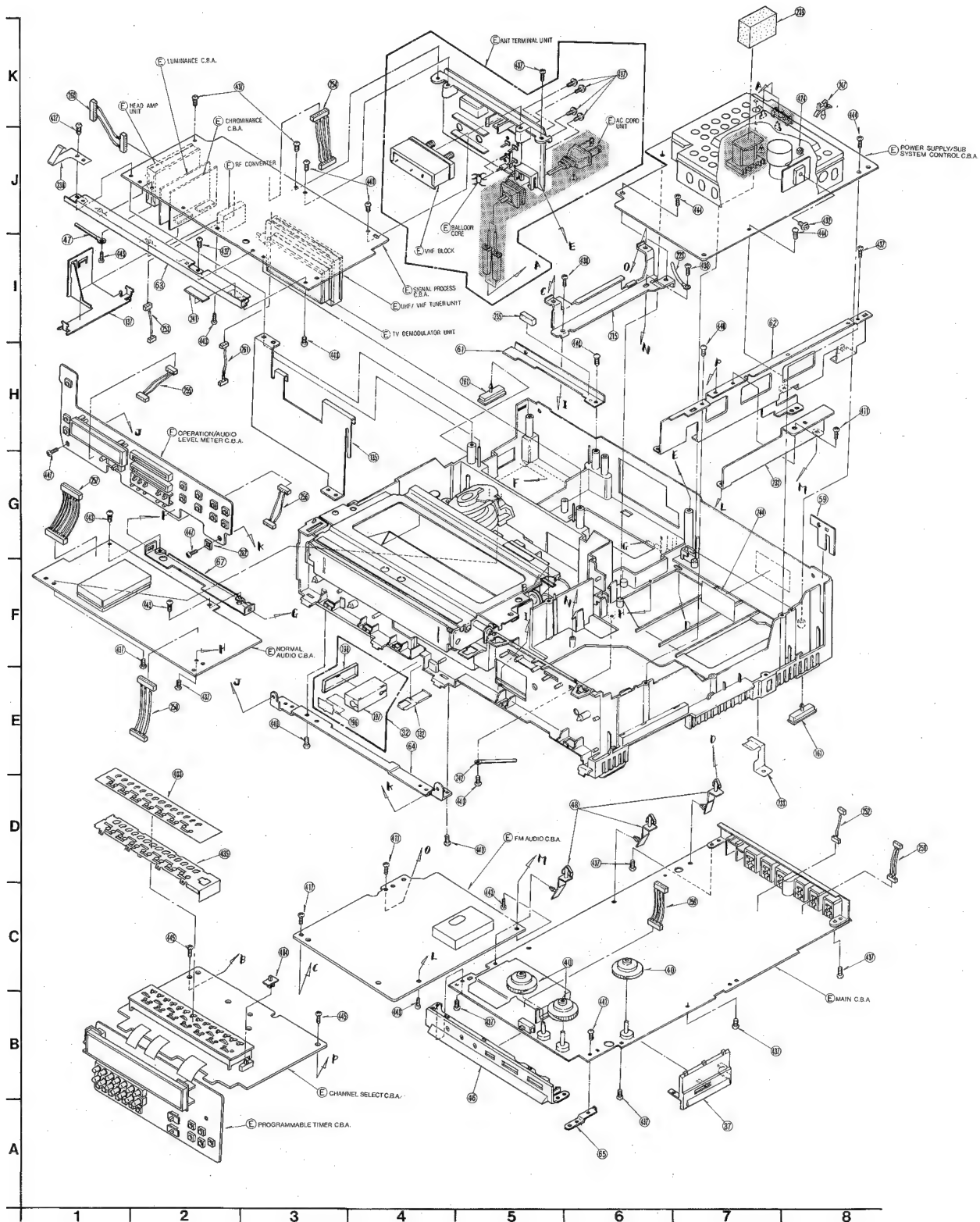


4 Cassette Up Mechanism Section

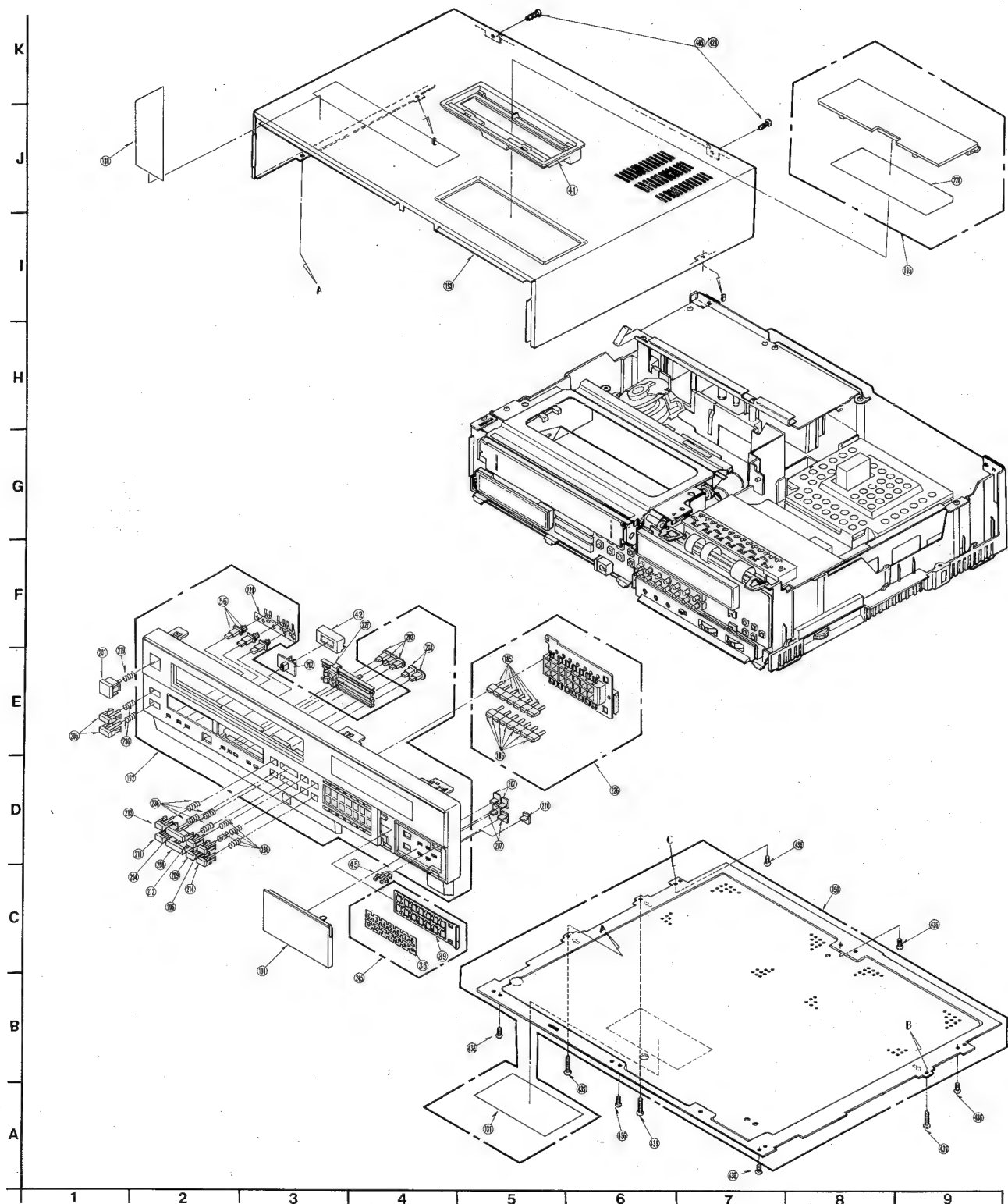


5 Chassis Frame & Tuner Parts Section

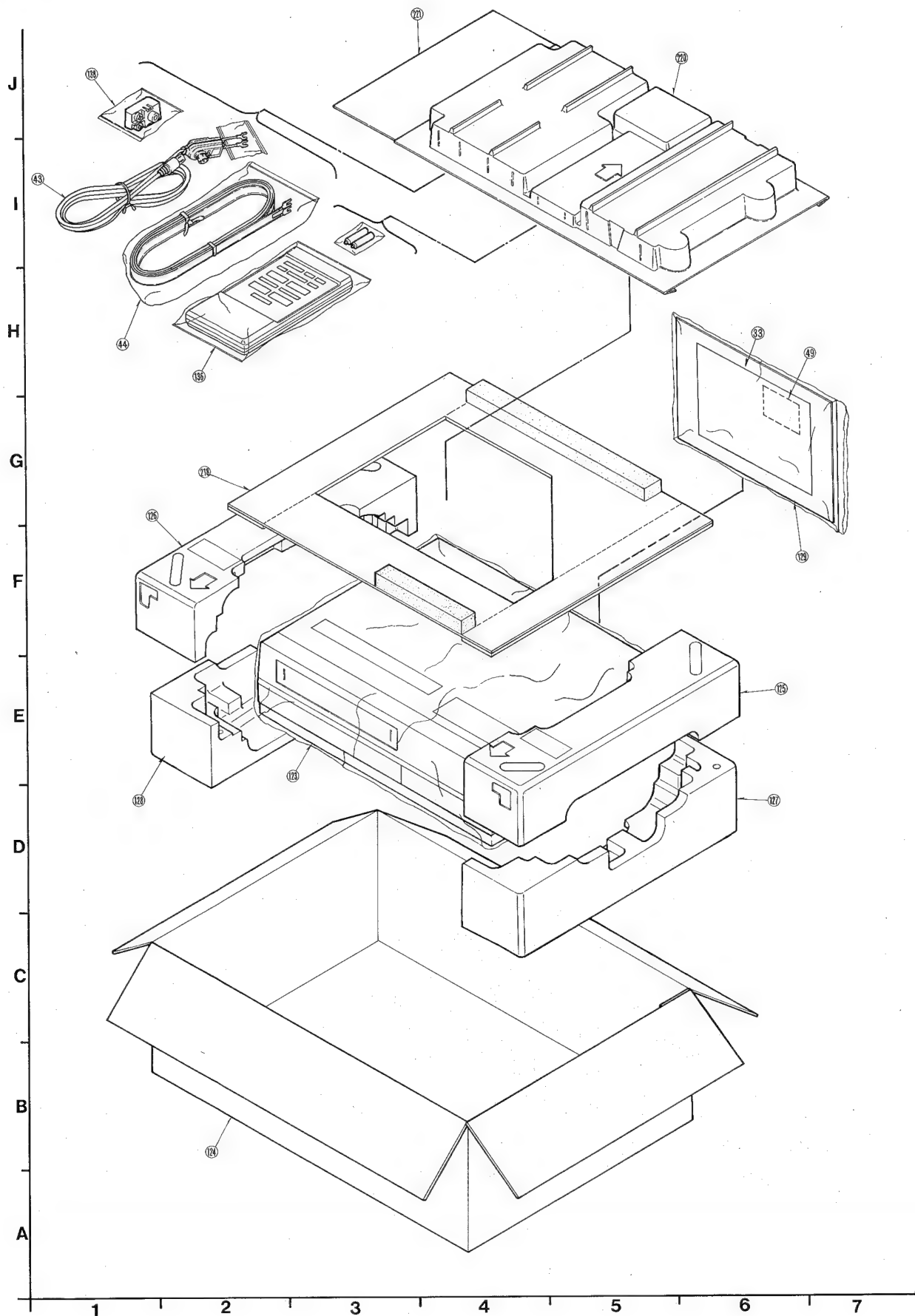
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



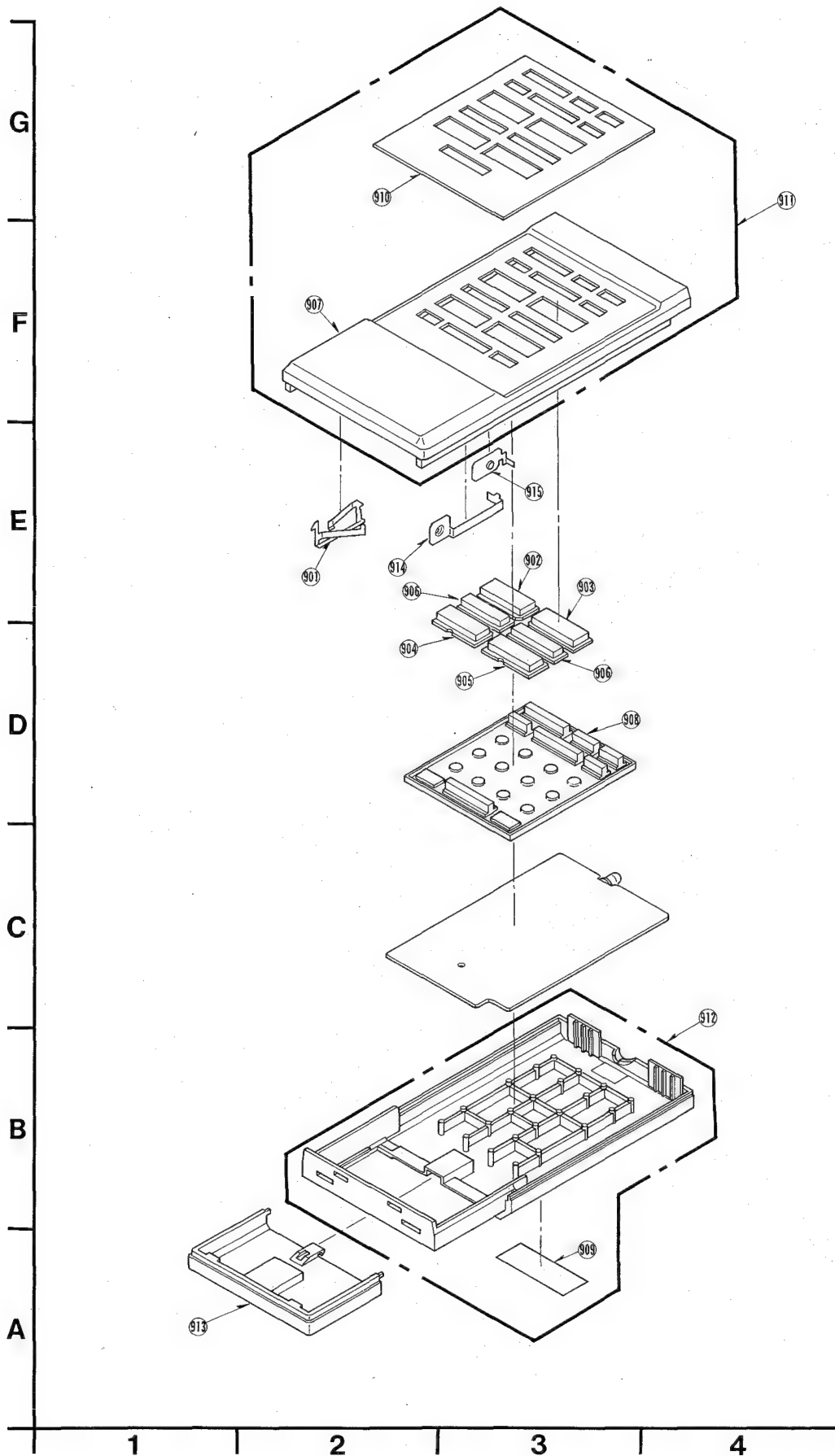
6 Casing Parts Section



7 Packing Parts & Accessories Section



⑧ IR Wireless Transmitter Unit Section



MECHANICAL REPLACEMENT PARTS LIST

Model No. PV-1631M

Note: Be sure to make your orders of replacement parts according to this list.

Item No.	Drawing No.	Description	Pcs/ Set	Part No.	Remark
1					
2	1	FASTENER	1	TYB-23M	
3	1	ERASE HEAD	1	VBS0027	
4	2	INTERMEDIATE GEAR -1	1	VDGS0038	
5	2	DRIVING GEAR	1	VDGS0039	
6	3	INTERMEDIATE GEAR -2	1	VDGS0040	
7	2	LOADING CAM GEAR	1	VDGS0041	
8	2	CHANGE GEAR	1	VDGS0042	
9	1	IDLER GEAR	1	VDGS0043	
10	1	INTERMEDIATE GEAR -A	1	VDGS0044	
11	3	PULLEY GEAR	1	VDGS0045	
12	1	INTERMEDIATE GEAR -B	1	VDGS0046	
13	2	KICK GEAR -1	1	VDGS0048	
14	2	RELEASE GEAR	1	VDGS0049	
15	2	KICK GEAR -2	1	VDGS0050	
16	4	WORM	1	VDGS0051	
17	4	MAIN SHAFT GEAR -R	1	VDGS0054	
18	1	CLUTCH PULLEY	1	VDPS0083	
19	4	WORM PULLEY	1	VDPS0088	
20	1	SUPPLY ROLLER	1	VDPS0091	
21	3	CAPSTAN BELT	1	VDVS0042	
22	3	LOADING BELT	1	VDVS0043	
23	4	LOADING BELT	1	VDVS0044	
24	1	D.D CYLINDER UNIT	1	VEG0304	
25	3	F.G HEAD UNIT	1	VEHS0068	
				OR VEHS0069	
26	1	A/C HEAD UNIT	1	VEHS0074	
27	1	UPPER CYLINDER UNIT	1	VEH0224	
28	1	LUG ASS'Y	1	VEKS1794	
29	4	CASSETTE LOADING MOTOR UNIT	1	VEMS0088	
30	3	CAPSTAN STATOR UNIT	1	VEMS0089	
31	3	LOADING MOTOR UNIT	1	VEMS0085	
32	5	IR WIRELESS RECEIVING DETECTOR UNIT	1	VEQS0276	
33	7	UHF CHANNEL FILM	1	VGKS0683	
34	2	MODE SELECT SWITCH	1	VES0016	
35					
36	6	VHF CHANNEL FILM	1	VGKS0550	
37	5	TRACKING V.R PANEL	1	VGPS0716	
38	4	BRIND PANEL	1	VGPS0937	
39	6	FILM HOLDER	1	VQGS0242	
40	5	TRACKING KNOB	3	VGTS0135	
41	6	TUNING DOOR DECORATION	1	VGPS0928	
42	6	POWER SELECT SWITCH KNOB PIECE	1	VQGS0363	
43	7	VHF CONNECTING CABLE	1	VSQS0215	
44	7	TWIN LEAD CONNECTOR	1	VJA0102	
45	6	DOOR CLAMPER	1	VQGS0374	
46	5	TRACKING PANEL	1	VJJS0067	
47	3,5	CLAMPER	2	VJR3	
48	5	HINGE	3	VKGS0009	
49	7	V -HOLD ADJ. TOOL	1	VXKS0365	
50	1	SHAFT HOLDER PLATE	2	VMAS0545	
51	3	TENSION REGULATOR PLATE	1	VMAS0875	
52	3	TENSION ANGLE	1	VMAS0876	
53	3	LOADING MOTOR BRACKET	1	VMAS0877	

Item No.	Drawing No.	Description	Pcs/ Set	Part No.	Remark
54	2	GROUNDING PLATE	1	VMAS0883	
55	4	CASSETTE HOLDER	1	VMAS0898	
56	6	RESET BUTTON	3	VGUS0738	
57	4	CASSETTE COMPARTMENT TOP PLATE	1	VXAS0676	
58	4	SWITCH BRACKET	1	VMAS0906	
59	5	TOP COVER ANGLE -R	1	VMAS0932	
60	3	THRUST HOLDER	1	VMAS0940	
61	5	TOP COVER SUPPORT ANGLE	1	VMAS0951	
62	5	P.B ANGLE	1	VMAS1058	
63	5	SIGNAL PROCESS C.B.A ANGLE	1	VMAS0953	
64	5	FRONT FRAME SUPPORT ANGLE	1	VMAS0954	
65	5	GROUNDING ANGLE	1	VMAS0955	
66	4	WORM WHEEL STOPPER	1	VMAS0986	
67	5	AUDIO C.B.A ANGLE	1	VMAS1007	
68	4	CASSETTE HOLDER SPRING-L	1	VMAS1014	
69	4	CASSETTE HOLDER SPRING-R	1	VMAS1015	
70	1	SUPPLY INERTIA SPRING	1	VMS0071	
71	1	POST SPRING -P,4	1	VMS0288	
72	2	KICK SPRING	1	VMS0330	
73	2	TENSION SPRING	1	VMS0331	
74	4	SOFT BRAKE SPRING	1	VMS0332	
75	2	SELECT GEAR LEVER SPRING	1	VMS0333	
76	2	PRESSURE ROLLER SPRING	1	VMS0334	
77	2	KICK LEVER SPRING	1	VMS0336	
78	2	SUB LEVER SPRING	1	VMS0337	
79	1	IDLER ARM SPRING	1	VMS0339	
80	1	ADJUST SPRING	1	VMS0425	
81	1	SOFT BRAKE SPRING -S	1	VMS0341	
82	1	A/C HEAD SPRING	1	VMS0342	
83	4	CASSETTE HOLDER GUIDE SPRING	2	VMS0345	
84	4	WIPER GEAR SPRING	1	VMS0348	
85	4	WIPER SPRING -L	1	VMS0349	
86	4	BLIND SPRING	1	VMS0350	
87	1	IDLER SPRING	1	VMS0335	
88					
89	1	ERASE HEAD LEVER SPRING	1	VMS0373	
90					
91	2	BRAKE ARM SPRING	1	VMS0409	
92	1	ADJUST SPRING	1	VMS0404	
93	1	LOADING SPRING	2	VMS0669	
94	1	POST STOPPER	1	VMS0031	
95	1	INERTIA ROLLER LIMITER	1	VMS0063	
96	1	POST STOPPER	1	VMS0199	
97	4	CASSETTE HOLDER GUIDE -R	1	VMS0203	
98	4	CASSETTE HOLDER GUIDE -L	1	VMS0204	
99	4	SLIDE -R	1	VMS0205	
100	4	SLIDE -L	1	VMS0206	
101	4	SIDE PLATE -L	1	VMS0208	
102	4	SWITCH CAM	1	VMS0209	
103	4	SWITCH PIECE	1	VMS0236	
104	2	SUB LEVER CUSHION	1	VMS0249	
105	3	OIL POOL	1	VMS0104	
106					
107	1	IDLER ARM -A	1	VMS0303	
108	1	CHANGE LEVER -B	1	VMS0305	
109	1	SOFT BRAKE ARM -S	1	VMS0306	
110	4	WIPER GEAR -R	1	VMS0320	
111	4	WIPER GEAR -L	1	VMS0321	

Item No.	Drawing No.	Description	Pcs/ Set	Part No.	Remark	Item No.	Drawing No.	Description	Pcs/ Set	Part No.	Remark
112	4	CASSETTE COMPARTMENT OPENER LEVER	1	VMLS0322		168	2	ARM LEVER UNIT	1	VXLS0272	
113	1	ERASE HEAD LEVER	1	VMLS0350		169	2	SECTOR GEAR UNIT	1	VXLS0273	
114	1	LEVER SHAFT	1	VMSS0381		170	2	TENSION ARM UNIT	1	VXLS0276	
115	4	WORM SHAFT	1	VMSS0394		171	4	CASSETTE OPENER LEVER	1	VXLS0295	
116	1	COLLAR	1	VMXS0035		172	4	WIPER GEAR R UNIT	1	VXLS0296	
117	1	POST CAP -P.4	1	VMXS0129		173	4	WIPER GEAR L UNIT	1	VXLS0297	
118	1	LIMITER SUPPORTER	1	VMXS0321		174	2	PRESSURE ROLLER LEVER UNIT	1	VXLS0310	
119	1	SLEEVE	1	VMXS0370		175	1	IDLER FRAME UNIT	1	VXPS0116	
				OR VMXS0372		176	3	CAPSTAN ROTOR UNIT	1	VXPS0119	
120	6	TIMER BUTTON RETURN SPRING	1	VMBS0399		177	1	LOADING GEAR UNIT	2	VXPS0120	
121	3	OIL SEAL	1	VMX0251		178	2	KICK GEAR UNIT	1	VXPS0121	
122	1	INERTIA ROLLER UPPER LIMITER	1	VNWS0002		179	3	CAPSTAN PULLEY UNIT	1	VXPS0122	
123	7	POLYETHYLENE BAG	1	VPFS0029		180	1	CLUTCH GEAR UNIT	1	VXPS0124	
124	7	PACKING CASE	1	VPFS1081		181	4	WORM WHEEL UNIT	1	VXPS0128	
125	7	RIGHT CUSHION -TOP	1	VPNS0157		182	4	MAIN SHAFT	1	VXPS0129	
126	7	LEFT CUSHION -TOP	1	VPNS0158		183	2	SUPPLY REEL TABLE UNIT	1	VXRS0016	
127	7	RIGHT CUSHION -BOTTOM	1	VPNS0159		184	2	TAKEUP REEL TABLE UNIT	1	VXRS0017	
128	7	LEFT CUSHION -BOTTOM	1	VPNS0160		185	6	CHANNEL SELECT BUTTON -A	14	VGUS0742	
129	7	FAN BAG	1	VQFS0708		186	2	BRAKE S UNIT	1	VXZS0055	
130	6	STICKER	1	VQLS1110		187	2	BRAKE T UNIT	1	VXZS0057	
131	6	BOTTOM CAUTION LABEL	1	VQLS1051		188	2	TENSION BAND UNIT	1	VXZS0059	
132	5	GROUNDING PLATE	1	VSCS0476		189	4	SOFT BRAKE T UNIT	1	VXZS0062	
133	5	GROUNDING ANGLE	1	VSCS0477		190	6	BOTTOM PANEL UNIT	1	VYFS0057	
134						191	6	TIMER DOOR UNIT	1	VYPS2461	
135	5	GROUNDING PLATE	1	VSCS0528		192	6	FRONT PANEL 1 UNIT	1	VYPS2450	
136	7	IR WIRELESS TRANSMITTER UNIT	1	VSQS0262		193	6	TOP COVER UNIT	1	VYPS2448	
137	5	TV DEMODULATOR UNIT SUPPORT	1	VMA51035		194	1,3,4	CLAMPER	9	VZFS0006	
		ANGLE				195	6	TUNING DOOR UNIT	1	VYPS2446	
138	7	VHF ANTENNA ADAPTOR	1	VSQ0057		196	5	FILTER PLATE	1	VQGS0294	
139	1	ROLLER POST UNIT	2	VXAS0562		197	5	SHIELD CASE	1	VSCS0309	
140	1	LOADING BASE 1 UNIT	1	VXAS0564		198	5	SHIELD CASE	1	VSCS0310	
141	1	SHAFT HOLDER BLOCK S UNIT	1	VXAS0565		199	4	CASSETTE ANGLE -R	1	VMA50907	
142	1	LOADING POST S UNIT	1	VXAS0566		200	4	CASSETTE ANGLE -L	1	VMA50908	
143	1	SHAFT HOLDER BLOCK T UNIT	1	VXAS0567		201	6	EJECT BUTTON	1	VGUS1064	
144	1	LOADING POST T UNIT	1	VXAS0568		202	6	POWER SELECT SWITCH KNOB	1	VGT50139	
145	2	MAIN LEVER UNIT	1	VXAS0570		203	6	FM AUDIO SELECT BUTTON	5	VGUS0964	
146	2	SUB LEVER UNIT	1	VXAS0572		204	6	OPERATION BUTTON -PLAY	1	VGUS0956	
147	2	KICK BASE UNIT	1	VXAS0705		205	6	OPERATION BUTTON -POWER/VCR	2	VGUS0728	
148	4	CASSETTE HOLDER GUIDE R UNIT	1	VXAS0608		206	6	OPERATION BUTTON -RECORD	1	VGUS0958	
149	4	CASSETTE HOLDER GUIDE L UNIT	1	VXAS0609		207	6	TIMER OPERATION BUTTON	4	VGUS1062	
150	4	CASSETTE HOLDER UNIT	1	VXAS0610		208	6	OPERATION BUTTON -STOP	1	VGUS0957	
151	4	CASSETTE GUIDE I UNIT	1	VXAS0614		209	6	OPERATION BUTTON -SLOW	1	VGUS0960	
152	4	CASSETTE UP UNIT	1	VXAS0685		210	6	O.T.R BUTTON	1	VGUS0741	
153	4	SIDE PLATE -R	1	VXAS0620		211	6	OPERATION BUTTON -PAUSE	1	VGUS0962	
154	4	SWITCH ANGLE UNIT	1	VXAS0625		212	6	OPERATION BUTTON -F.F	1	VGUS0961	
155	1	CASSETTE OPENER ANGLE UNIT	1	VXAS0648		213	6	OPERATION BUTTON -REWIND	1	VGUS0963	
156	4	SUPPORT ANGLE	1	VMA51028		214	6	OPERATION BUTTON -A.DUB	1	VGUS0959	
157						215	5	FM AUDIO C.B.A ANGLE -A	1	VMA51059	
158	1	DISCHARGE ANGLE UNIT	1	VXBS0022		216					
159	3	HOUSING	1	VXDS0012		217	2	KICK LEVER 1 UNIT	1	VXL50275	
160	4	RELEASE LEVER	1	VMLS0357		218	7	TOP PAD	1	VPGS1051	
161	5	CUSHION	2	VXGS0006		219	6	OPERATION BUTTON SPRING	1	VMS0256	
162	1	F.F SLIDE LEVER UNIT	1	VXKS0339		220	7	ACCESSORY CASE	1	VPGS0379	
163	1	LOADING ARM R UNIT	1	VXLS0200		221	7	ACCESSORY CASE PAD	1	VPGS0380	
164	1	LOADING ARM L UNIT	1	VXLS0201		222	4	RELEASE LEVER SPRING	1	VMS0418	
165	1	CHANGE LEVER -A	1	VXLS0267		223	1,3,5	CLAMPER	3	PEC-034-0	
166	1	IDLER ARM -B	1	VXLS0268		224	2	P5 ARM UNIT	1	VXLS0302	
167	2	ARM LEVER	1	VXLS0271		225	2	P5 IDLER LEVER	1	VMLS0358	

Item No.	Drawing No.	Description	Pcs/ Set	Part No.	Remark
226	6	CHANNEL SELECT BUTTON BRACKET	1	VYPS2459	
227	6	REC LEVEL SLIDE CONTROL UNIT	1	VYPS2311	
228	6	TUNING CAUTION LABEL	1	VQLS0891	
229					
230					
231	5	FM AUDIO C.B.A ANGLE -B	1	VMAS1060	
232					
233					
234	1	RT ROTOR BASE UNIT	1	VXA2004	
235	5	CUSHION	1	VMGS0054	
236	6	OPERATION BUTTON SPRING	10	VMBS0371	
237					
238	5	GROUNDING ANGLE	1	VMAS1051	
239	5	CUSHION	1	VMGS0055	
240	1	STATOR ANGLE UNIT	1	VXA2006	
241	5	CUSHION	1	VMGS0036	
242	5	CLAMPER	1	KEK-004	
243					
244	5	FUSE CAUTION LABEL	1	VQLS0768	
245	6	FILM HOLDER UNIT	1	VYQS0027	
246					
247	5	CLAMPER	1	VJFO004	
248					
249					
250	5	CONNECTOR ASS'Y	1	VEKS1701	
251	3	CONNECTOR ASS'Y	1	VEKS1707	
252	5	CONNECTOR ASS'Y	1	VEKS1705	
253	5	CONNECTOR ASS'Y	1	VEKS1719	
254	5	CONNECTOR ASS'Y	1	VEKS1924	
255	5	CONNECTOR ASS'Y	1	VEKS1878	
256	5	CONNECTOR ASS'Y	1	VEKS1882	
257	5	CONNECTOR ASS'Y	1	VEKS1885	
258	5	CONNECTOR ASS'Y	1	VEKS1893	
259	5	CONNECTOR ASS'Y	1	VEKS1894	
260	5	CONNECTOR ASS'Y	1	VEKS1933	
261	5	CONNECTOR ASS'Y	1	VEKS1964	
262	5	C.B.A GROUNDING PLATE	1	VSCS0594	
401	4	TAPPING SCREW 3X10	3	XTV3+10FRS	
402	4	TAPPING SCREW 2.6X6	1	XTV26+6FS	
403	5	TUNING V.R CASE DECORATION	1	VGNS0794	
404	5	SLIDE SWITCH KNOB -B	1	VGTS0118	
405	6	SCREW	2	VHDS0011	
406	1	SCREW	3	VHDS0016	
407	1	LOCK SCREW	2	VHDS0024	
408	1	SCREW WITH WASHER	2	OR VHDS0052	
409	1	ADJUST SCREW	1	VHDS0041	
410	1	SCREW	1	VHDS0045	

Item No.	Drawing No.	Description	Pcs/ Set	Part No.	Remark
411	5	TAPPING SCREW 3X6	3	XTV3+6FRS	
412	4	SCREW	2	VHDS0061	
413	3	SCREW	1	VHDS0062	
414	1	ADJUST NUT -3	1	VHNS0019	
415	1	IDLER ANGLE	1	OR VHNS0023	
416	1	CHANGE LEVER SPRING	1	VMBS0424	
417	2	SLIDE WASHER	3	VMXS0050	
418	4	WASHER	2	VMXS0098	
419	2	SLIDE WASHER F	3	VMXS0109	
420	2	WASHER	1	VMXS0335	
421	1,2	CUT WASHER	7	VMXS0336*	
422	2	CUT WASHER	1	VMXS0342*	
423	3	CAPSTAN THRUST WASHER	1	VMX0265	
424	5	M3 NUT	1	XNG3	
425	1	M3 NUT	2	XNG3E	
426	1	M3 NUT	1	XNG3EZU	
427	1	WASHER 5	1	XNG5E	
428	6	BIND SCREW 4X12	2	XSB4+12KS	
429	4	TAPPING SCREW 2.6X6	2	XTW26+6	
430	5	TAPPING SCREW 3X8	2	XTV3+8A	
431	1	SCREW 3X10	1	XSN3D10F	
432	5	SCREW WITH WASHER 3X12	1	XTN3+F12FNS	
433	1	TAPPING SCREW 2.6X6	1	XTV26+6F	
434	4	TAPPING SCREW 2.6X6	2	XTV26+6G	
435	5	GROUNDING PLATE	1	VSCS0408	
436	6	TAPPING SCREW 3X12	6	XTV3+12AK	
437	5	TAPPING SCREW 3X12	13	XTV3+12AR	
438	3	TAPPING SCREW 3X15	1	OR XTV3+12JR	
439	6	TAPPING SCREW 3X25	3	XTV3+15F	
440	5	TAPPING SCREW 3X8	7	XTV3+25AK	
441	5	TAPPING SCREW 3X6	1	XTV3+8B	
442	1	TAPPING SCREW 3X6	1	XTV3+6	
443	5	TAPPING SCREW 3X8	7	XTV3+6F	
444	5	TAPPING SCREW 3X8	3	XTV3+8	
445	5	TAPPING SCREW 3X10	2	XTV3+8AR	
446	1,2,3,4	TAPPING SCREW 3X8	29	OR XTV3+8JR	
447	5	TAPPING SCREW 3X8	2	XTV3+10AR	
448	4	TAPPING SCREW 3X8	4	OR XTV3+10JR	
449	4	TAPPING SCREW 2.6X8	4	XTV3+8F	
450	1	RETAINING RING E-TYPE 1.5	2	XTV3+8FRS	
451	1,2	RETAINING RING E-TYPE 2.5	3	XTV3+8G	
452	2,3	RETAINING RING C-TYPE 3	8	XTV3+8P	
453	1,2,4	RETAINING RING C-TYPE 4	13	XTW26+8P	
454	1	POLY SLIDER WASHER 2	1	XUC15FP	
455	1	POLY SLIDER WASHER 3	1	XUC25FP	
456	1,2	POLY SLIDER WASHER 3	4	XUEV3VW	
457	1	WASHER 5	1	XUEV4VW	
458	2	POLY SLIDER WASHER 3	1	XMGV2D5G	
459	2	POLY SLIDER WASHER 3	1	XMGV3D12G	
460	1,2,3	POLY SLIDER WASHER 3	11	XMGV3D54G	
461	2	POLY SLIDER WASHER 3	1	XMG5J12	
462	2	POLY SLIDER WASHER 3	1	XMXV3A54 (t=0.25)	
463	2	POLY SLIDER WASHER 3	1	XMXV3A8 (t=0.25)	
464	3	POLY SLIDER WASHER 3	1	XMXV3D54 (t=0.5)	
465	2	POLY SLIDER WASHER 4	2	XMXV3D8 (t=0.5)	
466	2	POLY SLIDER WASHER 3	1	XMXV3Z54 (t=0.13)	
467	2	POLY SLIDER WASHER 3	1	XMXV3Z8 (t=0.13)	
468	3	POLY SLIDER WASHER 3	1	XMXV35D6	
469	2	POLY SLIDER WASHER 4	2	XMXV4D11	

*This cut washer is not reusable. If removed, reinstall a new one.

ELECTRICAL REPLACEMENT PARTS LIST

Model No. PV-1631M

Special Notes
All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "Electrostatically Sensitive (ES) Devices" section of this service manual.

Notes
1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE

Components identified by the sign  have special characteristics important for safety.

When replacing any of these components, use only the specified parts.

3. Unless otherwise specified:

All resistors are in OHMS (Ω), 1/4W, $\pm 5\%$, carbon, K=1,000 Ω , M=1,000K Ω .

All capacitors are in MICROFARADS (UF), P=UUF, $\pm 10\%$.

All coils are in MICROHENRIES (UH), M=10³U, $\pm 10\%$.

4. C.B.A.: Circuit Board Assembly.

5. P.C.B.: Print Circuit Board.

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		PRINTED CIRCUIT BOARD ASSEMBLY		
	VEPS0251B1	MAIN C.B.A	1	
	VEPS0344E1	SIGNAL PROCESS C.B.A	1	
	VEPS0508B1	HEAD AMP UNIT	1	
	VEPS0143A1	POWER SUPPLY/SUB SYSTEM CONTROL C.B.A	1	
	VEPS0424B1	FM AUDIO C.B.A	1	
	VEPS0422B1	NORMAL AUDIO C.B.A	1	
	VEPS06112A2	OPERATION/AUDIO LEVEL METER C.B.A	1	
	VEPS07117D1	PROGRAMMABLE TIMER C.B.A	1	
	VRPS0243C1	CAPSTAN MOTOR DRIVE C.B.A	1	
	VEPS0337A	LUMINANCE C.B.A	1	
	VEPS0806A	CHROMINANCE C.B.A	1	
	VEQS0257	TV DEMODULATOR UNIT	1	
	VEPS07130A1	CHANNEL SELECT C.B.A	1	
		MAIN C.B.A		
		INTEGRATED CIRCUITS		
IC2001	AN6359		1	
	OR AN6359N			
IC2002	MN6168VIH		1	
IC2003	AN6356N		1	
IC2004	AN6387		1	
IC2005	UPD6110CA		1	
IC2006,2007	AN1358		2	
	OR AN6562			
	OR HA17358			
	OR UPC358C			
IC2008	AN1393		1	
	OR AN6914			
	OR HA17393			
	OR UPC393C			
IC2009	MN4013B		1	
	OR TC4013BP			
	OR UPD4013BC			
IC3201	TA7348P		1	
IG4701,4702	AN6558		2	
	OR BA4558			
IG4703,4704	TA7347P		2	
IG4705	BA715		1	
	OR TA75557S			
IC6001	MN15846VRC		1	
IC6004,6005	BA6209U		2	
		TRANSISTORS		
Q2001,2002	2SA937M(R)		2	
	OR			
	2SB641(Q,R,S)			

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
Q2003,2004	2SC2021M(R)		2	
	OR			
	2SD636(Q,R,S)			
Q2005,2006	2SA937M(R)		2	
	OR			
	2SB641(Q,R,S)			
Q2007-2011	2SC2021M(R)		5	
	OR			
	2SD636(Q,R,S)			
Q2012	2SA937M(R)		1	
	OR			
	2SB641(Q,R,S)			
Q2013	2SD1266		1	
	OR 2SD856			
Q2014	2SA937M(R)		1	
	OR			
	2SB641(Q,R,S)			
Q2015	2SC2021M(R)		1	
	OR			
	2SD636(Q,R,S)			
Q2018,2019	2SC2021M(R)		2	
	OR			
	2SD636(Q,R,S)			
Q2020	2SC2925(S)		1	
Q3201	2SC2021M(R)		1	
	OR			
	2SD636(Q,R,S)			
Q4701	2SD636(Q,R,S)		1	
Q4702	2SB641(Q,R)		1	
Q4703	2SD655(E,F)		1	
	OR 2SD661(S,T)			
Q4704	2SB641(Q,R)		1	
Q4705	2SD655(E,F)		1	
	OR 2SD661(S,T)			
Q4706,4707	2SD636(Q,R,S)		2	
Q6003-6005	2SD636(Q,R,S)		3	
Q6006	2SD638(Q,R,S)		1	
Q6007	2SD636(Q,R,S)		1	
Q6010-6012	2SA937M(R)		3	
	OR			
	2SB641(Q,R,S)			
Q6014	2SD636(Q,R,S)		1	
Q6016	2SD636(Q,R,S)		1	
Q6020	2SD636(Q,R,S)		1	
Q6021	2SA937M(R)		1	
	OR			
	2SB641(Q,R,S)			
Q6199	2SD636(Q,R,S)		1	
		DIODES		
D2001-2019	MA165		19	
	OR 1SS119			
D2022,2023	MA165		2	
	OR 1SS119			
D2026,2027	MA165		2	
	OR 1SS119			
D2038-2040	MA165		3	
	OR 1SS119			
D3201-3204	EQA02-13	ZENER	4	
	OR MA4130	ZENER		
	OR RD13EB	ZENER		
D3206,3207	MA165		2	
	OR 1SS119			
D4701	MA165		1	
D4702	MA4130	ZENER	1	
D4703	MA165		1	
D4704-4709	MA4130	ZENER	6	
D4710,4711	MA165		2	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
D4712	MA4062	ZENER	1		R2061	EVJFFAF15B15	VARIABLE	100K	1
	OR RD6.2EB	ZENER			R2062	ERDS2TJ223		22K	1
D6006,6007	MA165		2		R2063	ERDS2TJ154		150K	1
	OR 1SS119				R2064	ERDS2TJ562		5.6K	1
D6009-6015	MA165		7		R2065	ERDS2TJ104		100K	1
	OR 1SS119				R2066	EVNE4AA00B54	VARIABLE	50K	1
D6017,6018	MA165		2		R2067	ERDS2TJ103		10K	1
	OR 1SS119				R2068	ERDS2TJ102		1K	1
D6022,6023	MA165		2		R2069	EVN38CA00B15	VARIABLE	100K	1
	OR 1SS119				R2070,2071	ERDS2TJ104		100K	2
D6027	MA165		1		R2072	EVJFFAF15B15	VARIABLE	100K	1
	OR 1SS119				R2073	ERDS2TJ222		2.2K	1
D6029-6042	MA165		14		R2074	ERDS2TJ181		180	1
	OR 1SS119				R2075	ERDS2TJ223		22K	1
D6198,6199	MA165		2		R2076	ERDS2TJ474		470K	1
	OR 1SS119				R2077	ERDS2TJ563		56K	1
D6201	RD20EB	ZENER	1		R2078,2079	ERDS2TJ104		100K	2
					R2080	ERDS2TJ333		33K	1
					R2081	ERDS2TJ103		10K	1
					R2082	ERDS2TJ223		22K	1
		RESISTORS			R2083,2084	ERDS2TJ823		82K	2
R2001	ERDS2TJ223		22K	1	R2085	ERDS2TJ332		3.3K	1
R2002	ERDS2TJ334		330K	1	R2086	ERDS2TJ103		10K	1
R2003	ERDS2TJ272		2.7K	1	R2087	ERDS2TJ333		33K	1
R2004	ERDS2TJ473		47K	1	R2088,2089	ERDS2TJ104		100K	2
R2006	ERDS2TJ153		15K	1	R2090	ERDS2TJ184		180K	1
R2007	ERDS2TJ472		4.7K	1	R2091	ERDS2TJ104		100K	1
R2008	ERDS2TJ153		15K	1	R2092	ERDS2TJ684		680K	1
R2009-2011	ERDS2TJ103		10K	3	R2093	ERDS2TJ224		220K	1
R2012	ERDS2TJ153		15K	1	R2094	ERDS2TJ223		22K	1
R2013	ERDS2TJ105		1M	1	R2096	ERDS2TJ103		10K	1
R2014	ERDS2TJ333		33K	1	R2097	EVN38CA00B54	VARIABLE	50K	1
R2015	ERDS2TJ102		1K	1	R2098	EVN38CA00B15	VARIABLE	100K	1
R2016	ERDS2TJ472		4.7K	1	R2099,2100	EVLS3MA00B15	VARIABLE	100K	2
R2017	ERDS2TJ103		10K	1	R2101	ERDS2TJ223		22K	1
R2018,2019	ERDS2TJ332		3.3K	2	R2102	ERDS2TJ273		27K	1
R2020-2022	ERDS2TJ470		47	3	R2103	ERDS2TJ154		150K	1
R2023	EROS2TKG1801	PRECISION METAL FILM 1.8K + -2%	1		R2104	ERDS2TJ472		4.7K	1
R2024	EROS2TKG6801	PRECISION METAL FILM 6.8K + -2%	1		R2105,2106	ERDS2TJ103		10K	2
R2025	ERX12ANR56	METAL OXIDE 1/2W 0.56	1		R2107	ERDS2TJ473		47K	1
	OR ERX12SJR56	METAL OXIDE 1/2W 0.56			R2109	ERDS2TJ822		8.2K	1
R2026	ERDS2TJ104		100K	1	R2114	ERDS2TJ103		10K	1
R2027	ERDS2TJ124		120K	1	R2121	ERDS2TJ473		47K	1
R2028	ERDS2TJ823		82K	1	R2122	ERDS2TJ103		10K	1
R2029	ERDS2TJ473		47K	1	R2124	ERDS2TJ103		10K	1
R2030	ERDS2TJ124		120K	1	R2125	ERDS2TJ222		2.2K	1
R2031	ERDS2TJ272		2.7K	1	R2126	ERDS2TJ104		100K	1
R2032,2033	ERDS2TJ154		150K	2	R2127	ERDS2TJ563		56K	1
R2034	ERDS2TJ274		270K	1	R2128	ERDS2TJ224		220K	1
R2035	ERDS2TJ473		47K	1	R2129	ERDS2TJ102		1K	1
R2036	ERDS2TJ822		8.2K	1	R2130	ERDS2TJ473		47K	1
R2037	EROS2TKG6801	PRECISION METAL FILM 6.8K + -2%	1		R2131,2132	ERDS2TJ104		100K	2
R2038,2039	EROS2TKG1002	PRECISION METAL FILM 10K + -2%	2		R2133	ERDS2TJ223		22K	1
R2040	EROS2TKG1202	PRECISION METAL FILM 12K + -2%	1		R2134	ERDS2TJ183		18K	1
R2041	ERDS2TJ154		150K	1	R2135,2136	ERDS2TJ562		5.6K	2
R2042	EVN38CA00B54	VARIABLE	50K	1	R2137,2138	ERDS2TJ104		100K	2
R2043	ERDS2TJ682		6.8K	1	R2139	ERDS2TJ224		220K	1
R2044,2045	ERDS2TJ104		100K	2	R2140	ERDS2TJ561		560	1
R2046	ERDS2TJ563		56K	1	R2142	ERDS2TJ563		56K	1
R2047	ERDS2TJ104		100K	1	R2143	ERDS2TJ333		33K	1
R2048	ERDS2TJ393		39K	1	R2144,2145	ERDS2TJ104		100K	2
R2049,2050	ERDS2TJ104		100K	2	R2146	ERDS2TJ333		33K	1
R2051	ERDS2TJ563		56K	1	R3201	ERDS2TJ101		100	1
R2052-2054	ERDS2TJ393		39K	3	R3203	ERDS2TJ102		1K	1
R2055	EROS2TKG1003	PRECISION METAL FILM 100K + -2%	1		R3206	ERDS2TJ103		10K	1
R2056	ERDS2TJ103		10K	1	R3207	ERDS2TJ563		56K	1
R2057	EROS2TKG1202	PRECISION METAL FILM 12K + -2%	1		R3208	ERDS2TJ473		47K	1
R2058	EROS2TKG1602	PRECISION METAL FILM 16K + -2%	1		R3209	EVJFFAF15B24	VARIABLE	20K	1
R2059	ERDS2TJ224		220K	1	R3210	ERDS2TJ123		12K	1
R2060	ERDS2TJ103		10K	1	R3211	ERDS2TJ472		4.7K	1

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R3216	ERDS2TJ102		1K 1	
R4701	ERDS2TJ182		1.8K 1	
R4702,4703	ERDS2TJ103		10K 2	
R4704	ERDS2TJ105		1M 1	
R4705	ERDS2TJ101		100 1	
R4706	ERDS2TJ104		100K 1	
R4707	ERDS2TJ183		18K 1	
R4708	ERDS2TJ103		10K 1	
R4709	ERDS2TJ473		47K 1	
R4710	ERDS2TJ563		56K 1	
R4711	ERDS2TJ562		5.6K 1	
R4712	ERDS2TJ473		47K 1	
R4713	ERDS2TJ563		56K 1	
R4714	ERDS2TJ182		1.8K 1	
R4715	ERDS2TJ473		47K 1	
R4716	ERDS2TJ105		1M 1	
R4717	ERDS2TJ101		100 1	
R4718	ERDS2TJ104		100K 1	
R4719	ERDS2TJ183		18K 1	
R4720	ERDS2TJ103		10K 1	
R4721	ERDS2TJ563		56K 1	
R4722	ERDS2TJ562		5.6K 1	
R4723,4724	ERDS2TJ473		47K 2	
R4725	ERDS2TJ563		56K 1	
R4726	ERDS2TJ182		1.8K 1	
R4727	ERDS2TJ473		47K 1	
R4728,4729	ERDS2TJ151		150 2	
R4730	ERDS2TJ473		47K 1	
R4731	ERDS2TJ102		1K 1	
R4732	ERDS2TJ473		47K 1	
R4733	ERDS2TJ102		1K 1	
R4734,4735	ERDS2TJ223		22K 2	
R4736	ERDS2TJ182		1.8K 1	
R4737	ERDS2TJ472		4.7K 1	
R4738,4739	ERDS2TJ154		150K 2	
R4740,4741	ERDS2TJ104		100K 2	
R4742,4743	ERDS2TJ102		1K 2	
R4744	ERDS2TJ561		560 1	
R4746,4747	ERDS2TJ392		3.9K 2	
R4748,4749	ERDS2TJ154		150K 2	
R6008,6009	ERDS2TJ223		22K 2	
R6010	ERDS2TJ472		4.7K 1	
R6011	ERDS2TJ474		470K 1	
R6012	ERDS2TJ472		4.7K 1	
R6013,6014	ERDS2TJ104		100K 2	
R6015	ERDS2TJ472		4.7K 1	
R6021	ERDS2TJ824		820K 1	
R6022	ERDS2TJ102		1K 1	
R6023	ERDS2TJ273		27K 1	
R6024	ERDS2TJ123		12K 1	
R6025	ERDS2TJ102		1K 1	
R6026	ERDS2TJ223		22K 1	
R6027	ERDS2TJ563		56K 1	
R6028	ERDS2TJ102		1K 1	
R6029,6030	ERDS2TJ152		1.5K 2	
R6031	ERDS1TJ101	1/2W	100 1	
R6032-6034	ERDS2TJ222		2.2K 3	
R6035	ERDS2TJ333		33K 1	
R6036	ERDS2TJ224		220K 1	
R6037	ERDS2TJ822		8.2K 1	
R6038	ERDS2TJ223		22K 1	
R6039-6041	ERDS2TJ822		8.2K 3	
R6042-6044	ERDS2TJ223		22K 3	
R6045	ERDS2TJ332		3.3K 1	
R6046	ERDS2TJ154		150K 1	
R6047	ERDS2TJ224		220K 1	
R6048,6049	ERDS2TJ223		22K 2	
R6053	ERDS2TJ222		2.2K 1	
R6054	ERDS2TJ392		3.9K 1	
R6055	ERDS2TJ683		68K 1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R6056,6057	ERDS2TJ822		8.2K 2	
R6058-6061	ERDS2TJ682		6.8K 4	
R6062	ERDS2TJ822		8.2K 1	
R6063	ERDS2TJ223		22K 1	
R6064	ERDS2TJ471		470 1	
R6068,6069	ERDS2TJ392		3.9K 2	
R6077,6078	ERDS2TJ102		1K 2	
R6079	ERDS2TJ473		47K 1	
R6080,6081	ERDS2TJ472		4.7K 2	
R6082,6083	ERDS2TJ103		10K 2	
R6084,6085	ERDS2TJ472		4.7K 2	
R6087	ERDS2TJ104		100K 1	
R6088	ERDS2TJ472		4.7K 1	
R6089	ERDS2TJ102		1K 1	
R6091	ERDS2TJ102		1K 1	
R6092	ERDS2TJ103		10K 1	
R6093,6094	ERDS2TJ102		1K 2	
R6095	ERDS2TJ472		4.7K 1	
R6096	ERDS1FJ2R7	1/2W	2.7 1	
R6097	ERDS2TJ102		1K 1	
R6098	ERDS2TJ104		100K 1	
R6099	ERDS2TJ333		33K 1	
R6103,6104	ERDS2TJ472		4.7K 2	
R6108	ERDS2TJ274		270K 1	
R6109	ERDS2TJ333		33K 1	
R6111,6112	ERDS2TJ102		1K 2	
R6117	ERDS2TJ102		1K 1	
R6120	ERDS2TJ333		33K 1	
R6121,6122	ERDS2TJ562		5.6K 2	
R6123,6124	ERDS2TJ223		22K 2	
R6126,6127	ERDS2TJ562		5.6K 2	
R6128	ERDS2TJ332		3.3K 1	
R6129-6132	ERDS2TJ223		22K 4	
R6133	ERDS2TJ103		10K 1	
R6134	ERDS2TJ223		22K 1	
R6135	ERDS2TJ682		6.8K 1	
R6197	ERDS2TJ562		5.6K 1	
R6198,6199	ERDS2TJ104		100K 2	
R6201	ERDS2TJ102		1K 1	
		CAPACITORS		
C2001	ECEA1HS010	ELECTROLYTIC 50V	1 1	
	OR ECEA1HU010	ELECTROLYTIC 50V	1 1	
C2002	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1 1	
C2003	ECEA1EN3R3S	ELECTROLYTIC 25V 3.3	1 1	
C2004	ECQM1H103KV	POLYESTER 50V 0.01	1 1	
	OR ECQM1H103KZ	POLYESTER 50V 0.01	1 1	
C2005	ECEA1CS100	ELECTROLYTIC 16V	10 1	
	OR ECEA1CU100	ELECTROLYTIC 16V	10 1	
C2006	ECEA1HS010	ELECTROLYTIC 50V	1 1	
	OR ECEA1HU010	ELECTROLYTIC 50V	1 1	
C2007	ECEA1HN010S	ELECTROLYTIC 50V	1 1	
C2008	ECEA1HSOR1	ELECTROLYTIC 50V 0.1	1 1	
	OR ECEA1HUOR1	ELECTROLYTIC 50V 0.1	1 1	
C2009	VCYSARC222NX	CERAMIC 16V 0.0022 +-30%	1 1	
C2010	VCYW1E152KX	CERAMIC 25V 0.0015	1 1	
C2011	ECEA1HS2R2	ELECTROLYTIC 50V 2.2	1 1	
	OR ECEA1HU2R2	ELECTROLYTIC 50V 2.2	1 1	
C2012	ECEA1HN2R2S	ELECTROLYTIC 50V 2.2	1 1	
C2013	ECEA1CS101	ELECTROLYTIC 16V 100	1 1	
	OR ECEA1CU101	ELECTROLYTIC 16V 100	1 1	
C2014	VCYSARC682NX	CERAMIC 16V 0.0068 +-30%	1 1	
C2015	ECEA1CS221	ELECTROLYTIC 16V 220	1 1	
	OR ECEA1CU221	ELECTROLYTIC 16V 220	1 1	
C2016,2017	ECEA1HN2R2S	ELECTROLYTIC 50V 2.2	2 2	
C2018	VCYSARH102KB	CERAMIC 50V 0.001	1 1	
C2019	ECEA1ES3R3	ELECTROLYTIC 25V 3.3	1 1	
	OR ECEA1EU3R3	ELECTROLYTIC 25V 3.3	1 1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C2020	ECQM1H123KV	POLYESTER 50V 0.012	1		C2060	ECKW1H102ZF5	CERAMIC 50V 0.001	1	
	OR ECQM1H123KZ	POLYESTER 50V 0.012					+80%-20%		
C2021	ECEA1HSR22	ELECTROLYTIC 50V 0.22	1		C2061	ECQV05334JZ	POLYESTER 50V 0.33 +-5%	1	
	OR ECEA1HUR22	ELECTROLYTIC 50V 0.22				OR ECQV1H334JZ	POLYESTER 50V 0.33 +-5%		
C2022	ECEA1HS010	ELECTROLYTIC 50V 1	1		C2063	ECKW1H102ZF5	CERAMIC 50V 0.001	1	
	OR ECEA1HU010	ELECTROLYTIC 50V 1					+80%-20%		
C2023	VCYSARC472NX	CERAMIC 16V 0.0047 +-30%	1		C2064,2065	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	2	
C2024	ECQM1H102KV	POLYESTER 50V 0.001	1		C2066	ECQV05104JZ	POLYESTER 50V 0.1 +-5%	1	
	OR ECQM1H102KZ	POLYESTER 50V 0.001				OR ECQV1H104JZ	POLYESTER 50V 0.1 +-5%		
C2025	ECQM1H562KV	POLYESTER 50V 0.0056	1			OR ECQB1H104JH	POLYESTER 50V 0.1 +-5%		
	OR ECQM1H562KZ	POLYESTER 50V 0.0056			C2067	ECEAOJK470	ELECTROLYTIC 6.3V 47	1	
C2026	ECEA1HSOR1	ELECTROLYTIC 50V 0.1	1		C2068,2069	ECKW1H222ZF5	CERAMIC 50V 0.0022	2	
	OR ECEA1HUOR1	ELECTROLYTIC 50V 0.1					+80%-20%		
C2027	ECEAOJS470	ELECTROLYTIC 6.3V 47	1		C3201	ECEA1HS3R3	ELECTROLYTIC 50V 3.3	1	
	OR ECEAOJU470	ELECTROLYTIC 6.3V 47				OR ECEA1HU3R3	ELECTROLYTIC 50V 3.3		
C2028	ECQM1H562KV	POLYESTER 50V 0.0056	1		C3202	ECEA1ES100	ELECTROLYTIC 25V 10	1	
	OR ECQM1H562KZ	POLYESTER 50V 0.0056				OR ECEA1EU100	ELECTROLYTIC 25V 10		
C2029	ECEA1HSOR1	ELECTROLYTIC 50V 0.1	1		C3203,3204	ECEA1HS2R2	ELECTROLYTIC 50V 2.2	2	
	OR ECEA1HUOR1	ELECTROLYTIC 50V 0.1				OR ECEA1HU2R2	ELECTROLYTIC 50V 2.2		
C2030	ECQM1H562KV	POLYESTER 50V 0.0056	1		C3205	ECEA1CS470	ELECTROLYTIC 16V 47	1	
	OR ECQM1H562KZ	POLYESTER 50V 0.0056				OR ECEA1CU470	ELECTROLYTIC 16V 47		
C2031	ECEAOJS101	ELECTROLYTIC 6.3V 100	1		C3206	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
	OR ECEAOJU101	ELECTROLYTIC 6.3V 100				OR	+80%-20%		
C2032	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1			ECKW1H103ZV	CERAMIC 50V 0.01		
C2033,2034	ECEAOJS470	ELECTROLYTIC 6.3V 47	2				+80%-20%		
	OR ECEAOJU470	ELECTROLYTIC 6.3V 47			C4701,4702	ECEA1CK330	ELECTROLYTIC 16V 33	2	
C2035	ECQV05104JZ	POLYESTER 50V 0.1 +-5%	1		C4703	ECEA1AK330	ELECTROLYTIC 10V 33	1	
	OR ECQV1H104JZ	POLYESTER 50V 0.1 +-5%			C4704	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C2036	ECQM1H472JV	POLYESTER 50V 0.0047 +-5%	1		C4705	ECEA1HKOR1	ELECTROLYTIC 50V 0.1	1	
	OR ECQM1H472JZ	POLYESTER 50V 0.0047 +-5%			C4706	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C2037	ECQB1H563JH	POLYESTER 50V 0.056 +-5%	1		C4707	ECCW1H151J5	CERAMIC 50V 150P +-5%	1	
	OR ECQV05563JZ	POLYESTER 50V 0.056 +-5%				OR ECCW1H151K5	CERAMIC 50V 150P		
	OR ECQV1H563JZ	POLYESTER 50V 0.056 +-5%			C4708	ECKW1H102KB5	CERAMIC 50V 0.001	1	
C2038	ECQV05124JB	POLYESTER 50V 0.12 +-5%	1		C4709	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
	OR ECQV1H124JZ	POLYESTER 50V 0.12 +-5%			C4710	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C2039	ECEAOJS221	ELECTROLYTIC 6.3V 220	1		C4711,4712	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	2	
	OR ECEAOJU221	ELECTROLYTIC 6.3V 220			C4713,4714	ECCW1H151J5	CERAMIC 50V 150P +-5%	2	
C2040	ECEAOJS470	ELECTROLYTIC 6.3V 47	1			OR ECCW1H151K5	CERAMIC 50V 150P		
	OR ECEAOJU470	ELECTROLYTIC 6.3V 47			C4715	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C2041	VCYSARC472NX	CERAMIC 16V 0.0047 +-30%	1		C4716	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C2042	ECQM1H333KV	POLYESTER 50V 0.033	1		C4717	ECEA1HKOR1	ELECTROLYTIC 50V 0.1	1	
	OR ECQM1H333KZ	POLYESTER 50V 0.033			C4718	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C2043	ECQV05274JZ	POLYESTER 50V 0.27 +-5%	1		C4719	ECCW1H151J5	CERAMIC 50V 150P +-5%	1	
	OR ECQV1H274JZ	POLYESTER 50V 0.27 +-5%				OR ECCW1H151K5	CERAMIC 50V 150P		
C2044	ECQM1H272KV	POLYESTER 50V 0.0027	1		C4720	ECKW1H102KB5	CERAMIC 50V 0.001	1	
	OR ECQM1H272KZ	POLYESTER 50V 0.0027			C4721	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C2045,2046	ECEA1CS100	ELECTROLYTIC 16V 10	2		C4722	ECEA1CK100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10			C4723,4724	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	2	
C2047	ECEAOJS470	ELECTROLYTIC 6.3V 47	1		C4725,4726	ECCW1H151J5	CERAMIC 50V 150P +-5%	2	
	OR ECEAOJU470	ELECTROLYTIC 6.3V 47				OR ECCW1H151K5	CERAMIC 50V 150P		
C2048	VCYW1E393KX	CERAMIC 25V 0.039	1		C4727	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C2049	ECEAOJS470	ELECTROLYTIC 6.3V 47	1		C4728,4729	VCYS0001	MULTI FUNCTION 0.01	2	
	OR ECEAOJU470	ELECTROLYTIC 6.3V 47			C4730	ECCW1H820J5	CERAMIC 50V 82P +-5%	1	
C2050	ECQM1H333KV	POLYESTER 50V 0.033	1			OR ECCW1H820K5	CERAMIC 50V 82P		
	OR ECQM1H333KZ	POLYESTER 50V 0.033			C4731	ECEA1CS100	ELECTROLYTIC 16V 10	1	
C2051	VCYSARC332NX	CERAMIC 16V 0.0033 +-30%	1		C4732	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
C2052	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1				+80%-20%		
C2053	ECQV05334JZ	POLYESTER 50V 0.33 +-5%	1		C4733	ECEA1CN100S	ELECTROLYTIC 16V 10	1	
	OR ECQV1H334JZ	POLYESTER 50V 0.33 +-5%			C4734	ECQB1H153JZ	POLYESTER 50V 0.015 +-5%	1	
C2054	ECQM1H682KV	POLYESTER 50V 0.0068	1			OR ECQB1H153KZ	POLYESTER 50V 0.015		
	OR ECQM1H682KZ	POLYESTER 50V 0.0068			C4735	ECCW1H820J5	CERAMIC 50V 82P +-5%	1	
C2055	ECQM1H332KV	POLYESTER 50V 0.0033	1			OR ECCW1H820K5	CERAMIC 50V 82P		
	OR ECQM1H332KZ	POLYESTER 50V 0.0033			C4736	ECEA1CS100	ELECTROLYTIC 16V 10	1	
C2056	ECQV05334JZ	POLYESTER 50V 0.33 +-5%	1		C4737	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
	OR ECQV1H334JZ	POLYESTER 50V 0.33 +-5%					+80%-20%		
C2057	ECQM1H332KV	POLYESTER 50V 0.0033	1		C4738	ECEA1CN100S	ELECTROLYTIC 16V 10	1	
	OR ECQM1H332KZ	POLYESTER 50V 0.0033			C4740	ECEA1AS330	ELECTROLYTIC 10V 33	1	
C2058	VCYSARC332NX	CERAMIC 16V 0.0033 +-30%	1			OR ECEA1AU330	ELECTROLYTIC 10V 33		
C2059	VCYSARH102KB	CERAMIC 50V 0.001	1		C4741,4742	ECEA1CS330	ELECTROLYTIC 16V 33	2	
						OR ECEA1CU330	ELECTROLYTIC 16V 33		

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C4744	ECEA1ES3R3	ELECTROLYTIC 25V 3.3	1		P6008	VJPS0105		9P	1
	OR ECEA1EU3R3	ELECTROLYTIC 25V 3.3			P6010	VJPS0102		6P	1
C4745	ECEA1EN4R7S	ELECTROLYTIC 25V 4.7	1						
C4746,4747	ECEA1ES3R3	ELECTROLYTIC 25V 3.3	2						
	OR ECEA1EU3R3	ELECTROLYTIC 25V 3.3							
C4748	ECEA1EN4R7S	ELECTROLYTIC 25V 4.7	1				SWITCH		
C4749-4751	ECKW1H102KB5	CERAMIC 50V 0.001	3		SW2001	VSSS0034	SP/LP/SLP SELECT		1
C4752	VCYW1C104MX	CERAMIC 16V 0.1 +-20%	1						
C6002	ECEA1CS100	ELECTROLYTIC 16V 10	1						
	OR ECEA1CU100	ELECTROLYTIC 16V 10							
C6003	ECKW1H103ZF5	CERAMIC 50V 0.01	1				MISCELLANEOUS		
		+80%-20%				TMM7443	CLAMPER		4
C6004	ECEA0JS221	ELECTROLYTIC 6.3V 220	1			T18S	FASTENER		2
	OR ECEA0JU221	ELECTROLYTIC 6.3V 220				VEKS1890	LUG ASS'Y		1
C6005	ECKW1H103ZF5	CERAMIC 50V 0.01	1			VJJS0069	REAR JACK		1
		+80%-20%				VMX0573	SPACER		4
C6006	ECCW1H080CC	CERAMIC 50V 8P	1			VSC0497	SHIELD CASE		1
		+0.25PF				VSC0498	SHIELD CASE		1
C6007	ECRHA020D11	TRIMMER 20P	1			VZFS0006	CLAMPER		2
	OR MCV03R2002R	TRIMMER 20P							
C6009,6010	ECKW1H472ZF5	CERAMIC 50V 0.0047	2						
		+80%-20%							
C6011	ECKW1H103ZF5	CERAMIC 50V 0.01	1						
		+80%-20%							
C6012	VCYW1C104MX	CERAMIC 16V 0.1 +-20%	1				SIGNAL PROCESS C.B.A		
C6013	ECKW1H222ZF5	CERAMIC 50V 0.0022	1						
		+80%-20%					TRANSISTORS		
C6017	ECKW1H103ZF5	CERAMIC 50V 0.01	1		Q3001,3002	2SC2021M(Q,R,S)			2
		+80%-20%				OR			
C6019	ECEA1CS221	ELECTROLYTIC 16V 220	1			2SD636(Q,R,S)			
	OR ECEA1CU221	ELECTROLYTIC 16V 220			Q3006	2SA937M(Q,R,S)			1
C6021,6022	VCYW1C104MX	CERAMIC 16V 0.1 +-20%	2			OR			
C6024	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1			2SB641(Q,R,S)			
C6025	ECKW1H102ZF5	CERAMIC 50V 0.001	1		Q3007,3008	2SC2021M(Q,R,S)			2
		+80%-20%				OR			
C6026	ECEA0JK101	ELECTROLYTIC 6.3V 100	1			2SD636(Q,R,S)			
C6027,6028	VCYW1C104MX	CERAMIC 16V 0.1 +-20%	2		Q3010	2SA937M(Q,R,S)			1
C6031	ECCW1H470JC5	CERAMIC 50V 47P +-5%	1			OR			
C6032	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1			2SB641(Q,R,S)			
C6033	ECKW1H103ZF5	CERAMIC 50V 0.01	1		Q4551	2SC2021M(Q,R,S)			1
		+80%-20%				OR			
C6201	ECKW1H103ZF5	CERAMIC 50V 0.01	1			2SD636(Q,R,S)			
		+80%-20%			Q4552	2SA950Y			1
						OR 2SB643			
					Q4553	2SD637			1
					Q7001,7002	2SD637(Q,R,S)			2
					Q7004,7005	2SD637(Q,R,S)			2
					Q7006	2SC2021M(Q,R,S)			1
						OR			
						2SD636(Q,R,S)			

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
		RESISTORS		
R3001	EVNE4AA00B23	VARIABLE 2K	1	
R3002	ERDS2TJ821	820	1	
R3003	ERDS2TJ122	1.2K	1	
R3004	ERDS2TJ222	2.2K	1	
R3005	ERDS2TJ681	680	1	
R3006	ERDS2TJ820	82	1	
R3015	ERDS2TJ681	680	1	
R3016	EVNE4AA00B13	VARIABLE 1K	1	
R3017	ERDS2TJ561	560	1	
R3018	ERDS2TJ392	3.9K	1	
R3019	ERDS2TJ333	33K	1	
R3020	ERDS2TJ473	47K	1	
R3030,3031	ERDS2TJ103	10K	2	
R3034	ERDS2TJ471	470	1	
R3035	ERDS2TJ680	68	1	
R3036	ERDS2TJ102	1K	1	
R3037	ERDS2TJ561	560	1	
R3040	ERDS2TJ153	15K	1	
R3041	ERDS2TJ563	56K	1	
R3042	ERDS2TJ223	22K	1	
R3043-3045	ERDS2TJ473	47K	3	
R3046	ERDS2TJ333	33K	1	
R3048	ERDS2TJ682	6.8K	1	
R3049,3050	ERDS2TJ332	3.3K	2	
R3054	ERDS2TJ562	5.6K	1	
R3055	ERDS2TJ101	100	1	
R3056	ERDS2TJ681	680	1	
R3060	ERDS2TJ563	56K	1	
R3061	ERDS2TJ102	1K	1	
R3064	ERDS2TJ102	1K	1	
R4551,4552	ERDS2TJ223	22K	2	
R4553	ERDS2TJ333	33K	1	
R4554,4555	ERDS2TJ472	4.7K	2	
R7001	ERDS2TJ273	27K	1	
R7002	ERDS2TJ222	2.2K	1	
R7003	ERDS2TJ183	18K	1	
R7004	AVNE4AA0B102	VARIABLE 1K	1	
	OR EVNE4AA00B13	VARIABLE 1K	1	
R7005	ERDS2TJ681	680	1	
R7006	ERDS2TKG6802	PRECISION METAL FILM 68K +2%	1	
R7008	ERDS2TKG1203	PRECISION METAL FILM 120K +2%	1	
R7011	ERDS2TJ103	10K	1	
R7012	ERDS2TJ473	47K	1	
R7013	ERDS2TJ104	100K	1	
R7016	ERDS2TJ393	39K	1	
R7017,7018	ERDS2TJ104	100K	2	
R7019	ERDS1TJ151	1/2W 150	1	
R7020	ERDS2TJ103	10K	1	
R7021	ERDS2TJ153	15K	1	
R7022,7023	ERDS2TJ221	220	2	
R7026	ERDS2TJ151	150	1	
R7027	ERDS1TJ221	1/2W 220	1	
R7028	ERDS2TJ101	100	1	
R7031	ERDS2TJ223	22K	1	
		CAPACITORS		
C3001	VCYSARH820KB	CERAMIC 50V 82P	1	
C3002	VCYSARH331KB	CERAMIC 50V 330P	1	
C3003	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1	
C3004	VCYSARH820KB	CERAMIC 50V 82P	1	
C3016	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1	
C3027	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1	
C3028	ECEA1CS470	ELECTROLYTIC 16V 47	1	
	OR ECEA1CU470	ELECTROLYTIC 16V 47	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C3029	ECEA1JS471	ELECTROLYTIC 63V 470	1	
	OR ECEA1JU471	ELECTROLYTIC 63V 470	1	
C3030	ECKF1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C3031	ECEA0JS470	ELECTROLYTIC 6.3V 47	1	
C3040	VCYSARH102KB	CERAMIC 50V 0.001	1	
C3041	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1	
C3042	ECEA1CN100S	ELECTROLYTIC 16V 10	1	
C3043,3044	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	2	
C4551	ECEA1CS100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10	1	
C4555	VCYW1E153KX	CERAMIC 25V 0.015	1	
C4556	ECKW1H472ZF5	CERAMIC 50V 0.0047	1	
		+80%-20%		
C4557	EQQB1H333KZ	POLYESTER 50V 0.033	1	
	OR EQQV05333JZ	POLYESTER 50V 0.033 +-5%	1	
C4558	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1	
C4559	ECEA1HN4R7S	ELECTROLYTIC 50V 4.7	1	
C7001	ECEA1ES220	ELECTROLYTIC 25V 22	1	
	OR ECEA1EU220	ELECTROLYTIC 25V 22	1	
C7002	ECEA1ES4R7	ELECTROLYTIC 25V 4.7	1	
	OR ECEA1EU4R7	ELECTROLYTIC 25V 4.7	1	
C7003	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C7004	EQQB1H103KZ	POLYESTER 50V 0.01	1	
	OR EQQM1H103KV	POLYESTER 50V 0.01	1	
	OR EQQM1H103KZ	POLYESTER 50V 0.01	1	
C7005	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C7007	EQQB1H333JZ	POLYESTER 50V 0.033 +-5%	1	
	OR EQQM1H333KV	POLYESTER 50V 0.033	1	
C7008	ECEA1HS010	ELECTROLYTIC 50V 1	1	
	OR ECEA1HU010	ELECTROLYTIC 50V 1	1	
C7009	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C7010	ECEA1CU102	ELECTROLYTIC 16V 1000	1	
C7012	ECEA1CS470	ELECTROLYTIC 16V 47	1	
	OR ECEA1CU470	ELECTROLYTIC 16V 47	1	
C7013	ECEA502R1	ELECTROLYTIC 50V 0.1	1	
C7014	ECEA0JS102	ELECTROLYTIC 6.3V 1000	1	
	OR ECEA0JU102	ELECTROLYTIC 6.3V 1000	1	
C7016	ECEA1ES220	ELECTROLYTIC 25V 22	1	
	OR ECEA1EU220	ELECTROLYTIC 25V 22	1	
C7017	ECEA1CS221	ELECTROLYTIC 16V 220	1	
	OR ECEA1CU221	ELECTROLYTIC 16V 220	1	
C7020	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C7021	EQQB1H273KZ	POLYESTER 50V 0.027	1	
	OR EQQM1H273KV	POLYESTER 50V 0.027	1	
C7023	ECEA0JS221	ELECTROLYTIC 6.3V 220	1	
	OR ECEA0JU221	ELECTROLYTIC 6.3V 220	1	
C7024	MCCW1H360JC	CERAMIC 50V 36P +-5%	1	
C7026	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C7027	ECEA1CS100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10	1	
C7028	ECEA1HS010	ELECTROLYTIC 50V 1	1	
	OR ECEA1HU010	ELECTROLYTIC 50V 1	1	
C7029,7030	ECKW1H103ZF5	CERAMIC 50V 0.01	2	
		+80%-20%		
C7033	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
		COILS		
L3001	VLQSA04R820K		82	1
L3002	VLQS66R101K		100	1
L3012	VLQS66R101K		100	1
L4551	VLQS66F221K		220	1

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
L7001,7002	VLQSL01101K		100 2	
L7003	VLQS66R470K		47 1	
L7004	VLQS66R330K		33 1	
		TRANSFORMER		
T4551	ELM7Q019E		1	
		PRINTED CIRCUIT BOARD ASSEMBLY		
	VEPS0337A	LUMINANCE C.B.A	1	
	VEPS0508B1	HEAD AMP UNIT	1	
	VEPS0806A	CHROMINANCE C.B.A	1	
	VEQS0257	TV DEMODULATOR UNIT	1	
		MISCELLANEOUS		
	T18S	FASTENER	2	
	VEKS1793	LUG ASS'Y	1	
	VMAS0953	SIGNAL PROCESS C.B.A ANGLE	1	
	VMTS0035	CUSHION	7	
	VMXS0366	SPACER	2	
	VZFS0006	CLAMPER	1	
		HEAD AMP UNIT		
		INTEGRATED CIRCUITS		
IC3501	AN3220K		1	
IC3502	AN3310K		1	
		TRANSISTORS		
Q3502	2SC2206		1	
Q3503,3504	2SC2021M(Q,R,S)		2	
	OR			
	2SD636(Q,R,S)			
		RESISTORS		
R3501	ERDS2TJ681		680 1	
R3502	ERDS2TJ122		1.2K 1	
R3503	ERDS2TJ151		150 1	
R3504	ERDS2TJ222		2.2K 1	
R3505-3508	ERDS2TJ100		10 4	
R3509-3512	ERDS2TJ102		1K 4	
R3513	ERDS2TJ681		680 1	
R3514	ERDS2TJ821		820 1	
R3515	ERDS2TJ561		560 1	
R3516	ERDS2TJ821		820 1	
R3517	ERDS2TJ152		1.5K 1	
R3518	ERDS2TJ222		2.2K 1	
R3519,3520	ERDS2TJ102		1K 2	
R3521	ERDS2TJ271		270 1	
R3522	ERDS2TJ122		1.2K 1	
R3523	ERDS2TJ102		1K 1	
R3524	ERDS2TJ223		22K 1	
R3525	ERDS2TJ683		68K 1	
R3526	ERDS2TJ392		3.9K 1	
R3527	ERDS2TJ223		22K 1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
		CAPACITORS		
C3501	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3502	ECCZ1H180JC	CERAMIC 50V 18P +-5%	1	
	OR ECCZ1H180JC6	CERAMIC 50V 18P +-5%		
C3504	VCYD1C104MX	CERAMIC 16V 0.1 +-20%	1	
C3505	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3506	VCYD1C104MX	CERAMIC 16V 0.1 +-20%	1	
C3507	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3508,3509	ECEA1CK470	ELECTROLYTIC 16V 47	2	
C3510	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C3511	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3512	ECCZ1H270JC	CERAMIC 50V 27P +-5%	1	
	OR ECCZ1H270JC6	CERAMIC 50V 27P +-5%		
C3513	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3514	ECCZ1H330JC	CERAMIC 50V 33P +-5%	1	
	OR ECCZ1H330JC6	CERAMIC 50V 33P +-5%		
C3515,3516	ECEA1HK010	ELECTROLYTIC 50V 1	2	
C3517	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3518	ECCW1H150JC	CERAMIC 50V 15P +-5%	1	
	OR ECCW1H150JC6	CERAMIC 50V 15P +-5%		
	OR ECCZ1H150JC	CERAMIC 50V 15P +-5%		
	OR ECCZ1H150JC6	CERAMIC 50V 15P +-5%		
C3519	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3520	ECCZ1H330JC	CERAMIC 50V 33P +-5%	1	
	OR ECCZ1H330JC6	CERAMIC 50V 33P +-5%		
C3521	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C3522,3523	ECKZ1H103ZF5	CERAMIC 50V 0.01	2	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3524	ECEA1CK470	ELECTROLYTIC 16V 47	1	
C3525	ECKZ1H103ZF5	CERAMIC 50V 0.01	1	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3526	ECCZ1H220JC	CERAMIC 50V 22P +-5%	1	
	OR ECCZ1H220JC6	CERAMIC 50V 22P +-5%		
C3527	ECCZ1H470JC	CERAMIC 50V 47P +-5%	1	
	OR ECCZ1H470JC6	CERAMIC 50V 47P +-5%		
C3528	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C3529	ECCW1H820JC	CERAMIC 50V 82P +-5%	1	
	OR ECCW1H820JC6	CERAMIC 50V 82P +-5%		
C3530	ECKW1H102KB5	CERAMIC 50V 0.001	1	
C3532,3533	ECKZ1H103ZF5	CERAMIC 50V 0.01	2	
	OR	+80%-20%		
	ECKZ1H103ZV	CERAMIC 50V 0.01		
		+80%-20%		
C3534	ECKZ1H331KB	CERAMIC 50V 330P	1	
	OR ECKZ1H331KB6	CERAMIC 50V 330P		

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		COILS		
L3501	VLQEL05R330K		33	1
L3502	VLQEL05R101K		100	1
L3503-3506	VEKS1989		2	4
L3507,3508	VLQEL05R101K		100	2
L3509	VLQEL05R470K		47	1
L3510	VLQEL05R220K		22	1
L3511	VLQEL05R330K		33	1
L3512	VLQEL05R181K		180	1
		PIN HEADER		
P3501	VJPS0039		8P	1
		MISCELLANEOUS		
	VJHS0045	PACK PIN		3
	VSCS0410	SHIELD CASE		1
	VSCS0428	SHIELD CASE		1
	VSCS0430	SHIELD CASE		1
	VSCS0572	SHIELD CASE		1
		POWER SUPPLY/SUB SYSTEM CONTROL		
		C.B.A		
		INTEGRATED CIRCUITS		
IC1001	TLP521-1-YG			1
	OR ON3111			
IC6003	MB88201-128L			1
		TRANSISTORS		
Q1001	2SD1244			1
Q1002	2SB976			1
Q1003	2SB642			1
Q1004	2SC3577			1
Q1006	2SD1643			1
Q1007	2SD637			1
Q1009	2SD636(Q,R,S)			1
Q1010	2SB642			1
Q1011	2SB644			1
Q1012	2SB642			1
Q1013	2SC2594			1
Q1014	2SD1458			1
Q1015,1016	2SD639			2
Q6001	2SB641(Q,R,S)			1
Q6002	2SD636(Q,R,S)			1
Q6008,6009	2SD636(Q,R,S)			2
Q6019	2SD636(Q,R,S)			1
Q6221	2SD636(Q,R,S)			1
		DIODES		
D1001	1N4148			1
	OR 1N4148			
D1002	1N4148			1
D1003-1005	MA165			3
D1006	MA4130H	ZENER		1
D1007	MA170			1

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
D1008	MA165		1	
D1009	MA167		1	
D1010	D1K40		1	
	OR ERB43-04			
D1011	MA651		1	
D1012	D1K40		1	
	OR ERB43-04			
D1013	MA4068M	ZENER	1	
D1014	MA165		1	
D1015	ERB81-004		1	
D1019	MA4051M	ZENER	1	
D1020	MA165		1	
D1021	MA4051M	ZENER	1	
D1022	MA4130L	ZENER	1	
D1023, 1024	MA165		2	
D1026	MA4051	ZENER	1	
	OR RD5.1EB	ZENER		
D1030	D1K40		1	
	OR ERB43-04			
D1031, 1032	MA165		2	
D1033	MA4150L		1	
D6001-6004	MA165		4	
	OR 1SS119			
D6005	RD5.6EB2	ZENER	1	
D6221	MA165		1	
	OR 1SS119			
		RESISTORS		
R1001	ERDS2TJ334		330K	1
R1002	ERG3SJ333	METAL OXIDE	3W 33K	1
	OR KRGSJ333	METAL OXIDE	3W 33K	
R1003	ERD25FJ6R2		6.2	1
R1004	ERD25FJ222		2.2K	1
R1005	ERD25FJ152		1.5K	1
R1006	ERD25FJ4R7		4.7	1
R1008	ERD25FJ472		4.7K	1
R1009	ERDS2TJ471		470	1
R1010	ERD25FJ560		56	1
R1011	ERD25FJ330		33	1
R1012	ERDS2TJ331		330	1
R1013	ERDS2TJ104		100K	1
R1017	ERDS2TJ221		220	1
R1018	ERDS2TJ562		5.6K	1
R1019	ERDS2TJ103		10K	1
R1020	ERDS2TJ562		5.6K	1
R1021	ERDS2TJ221		220	1
R1022	ERDS2TJ3R3		3.3	1
R1023	ERDS1FJ1R0		1/2W	1
R1025	PRC122GK275	SOLID	1/2W 2.7M +10%	1
R1026	ERDS2TJ472		4.7K	1
R1027, 1028	ERDS2TJ104		100K	2
R1029	ERDS2TJ103		10K	1
R1032	ERF-2AK2R2	METAL OXIDE	2W 2.2 +10%	1
R1033	ERD25FJ472		4.7K	1
R1034	ERDS2TJ334		330K	1
R1035	ERD25FJ150		15	1
R1036	ERD25FJ220		22	1
R1037	ERDS2TJ562		5.6K	1
R1038	ERDS2TJ471		470	1
R1039	ERD25FJ330		33	1
R1040	ERDS2TJ333		33K	1
R1041, 1042	ERD2FCGP121		120 +2%	2
	OR ERD2FCGP121		120 +2%	
R1043	ERDS2TJ822		8.2K	1
R1044	ERDS2TJ560		56	1
R1045	ERDS2TJ822		8.2K	1
R1046	ERDS2TJ274		270K	1
R1050	ERDS2TJ274		270K	1

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R1051	ERDS2TJ104	100K	1	
R1052	ERDS2TJ473	47K	1	
R6001	ERG1ANJ181	METAL OXIDE 1W 180	1	
	OR ERG1SJ181	METAL OXIDE 1W 180	1	
R6002,6003	ERDS2TJ333	33K	2	
R6004	ERDS2TJ472	4.7K	1	
R6005	ERDS2TJ153	15K	1	
R6006	ERDS2TJ332	3.3K	1	
R6007	ERDS2TJ152	1.5K	1	
R6070	ERDS2TJ103	10K	1	
R6071	ERDS2TJ682	6.8K	1	
R6072,6073	ERDS2TJ103	10K	2	
R6075	ERDS2TJ103	10K	1	
R6085	ERDS2TJ563	56K	1	
R6100	ERDS2TJ103	10K	1	
R6112,6113	ERDS2TJ472	4.7K	2	
R6114,6115	ERDS2TJ102	1K	2	
R6129-6132	ERDS2TJ223	22K	4	
R6221,6222	ERDS2TJ223	22K	2	
R6223	ERDS2TJ472	4.7K	1	
		CAPACITORS		
C1001,1002	EQQU2A683MN	POLYESTER 200V 0.068 +-20%	2	
C1003,1004	VCKS0001	CERAMIC 0.001	2	
C1005	ECES2GV151Y	ELECTROLYTIC 200V 150	1	
C1006	ECEA2EG4R7Y	ELECTROLYTIC 250V 4.7	1	
	OR KM250VB4R7	ELECTROLYTIC 250V 4.7	1	
C1007	ECEA1EG220	ELECTROLYTIC 25V 22	1	
	OR KMA16VB-22	ELECTROLYTIC 16V 22	1	
C1008	VCKS0001	CERAMIC 0.001	1	
C1009	KM50VB-22	ELECTROLYTIC 50V 22	1	
C1010	ECEA1HG2R2S	ELECTROLYTIC 50V 2.2	1	
	OR KMA50VB-2R2	ELECTROLYTIC 50V 2.2	1	
C1011	EQQV05153JZ	POLYESTER 50V 0.015 +-5%	1	
C1012	ECEA1HU470X	ELECTROLYTIC 50V 47	1	
	OR SXE50VB-68	ELECTROLYTIC 50V 68	1	
C1013,1014	ECEA1CU222X	ELECTROLYTIC 16V 2200	2	
	OR SXE16VB2200	ELECTROLYTIC 16V 2200	1	
C1015	ECEA1HU470X	ELECTROLYTIC 50V 47	1	
	OR SXE50VB-68	ELECTROLYTIC 50V 68	1	
C1016,1017	ECEAOJF102W	ELECTROLYTIC 6.3V 1000	2	
	OR SXE6.3VB1200	ELECTROLYTIC 6.3V 1200	1	
C1019	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C1021,1022	ECEA1HG100S	ELECTROLYTIC 50V 10	2	
	OR KMA16VB-10	ELECTROLYTIC 16V 10	1	
C1025	ECEA1CU222X	ELECTROLYTIC 16V 2200	1	
	OR SXE16VB2200	ELECTROLYTIC 16V 2200	1	
C1026	ECEAOJF102W	ELECTROLYTIC 6.3V 1000	1	
	OR SXE6.3VB1200	ELECTROLYTIC 6.3V 1200	1	
C1029	ECEA1HG100S	ELECTROLYTIC 50V 10	1	
	OR KMA16VB-10	ELECTROLYTIC 16V 10	1	
C1030	ECEA1HG100S	ELECTROLYTIC 50V 10	1	
	OR KM50VB-10	ELECTROLYTIC 50V 10	1	
C1031-1033	ECKW1H102KB5	CERAMIC 50V 0.001	3	
C1034	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C1035	EQQM1102KZ	POLYESTER 100V 0.001	1	
C1039,1040	ECKW1H103ZF5	CERAMIC 50V 0.01	2	
		+80%-20%		
C1041	ECEA1AG101S	ELECTROLYTIC 10V 100	1	
	OR KM6.3VB-100	ELECTROLYTIC 6.3V 100	1	
C1042	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C1043	EQQM1H103KV	POLYESTER 50V 0.01	1	
	OR EQQM1H103KZ	POLYESTER 50V 0.01	1	
C1044	ECKW1H471KB5	CERAMIC 50V 470P	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C1045	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C1049	KMA16VB-22	ELECTROLYTIC 16V 22	1	
C1050	ECKW1H471KB5	CERAMIC 50V 470P	1	
C1051	ECEA1CS100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10	1	
C6001	ECEAOJS221	ELECTROLYTIC 6.3V 220	1	
	OR ECEAOJU221	ELECTROLYTIC 6.3V 220	1	
C6008	EECW5R5F473	GOLD 5.5V 0.047F	1	
C6015,6016	ECCW1H330JC5	CERAMIC 50V 33P +-5%	2	
C6018	ECEA1CS470	ELECTROLYTIC 16V 47	1	
	OR ECEA1CU470	ELECTROLYTIC 16V 47	1	
C6020	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
C6023	ECEAOJS330	ELECTROLYTIC 6.3V 33	1	
	OR ECEAOJU330	ELECTROLYTIC 6.3V 33	1	
C6221	ECEA1CS100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10	1	
C6222	ECKW1H103ZF5	CERAMIC 50V 0.01	1	
		+80%-20%		
		COILS		
L1001	ELF18D410		56	1
L1002	VLQS11H560K		56	1
	OR VLQS11H560M		56 +-20%	1
L1003	VLQS0006		22	1
	OR VLQS9H220M		22 +-20%	1
L1004,1005	VLQS0007		100	2
	OR VLQS9H101K		100	1
L1007	VLQS05R4R7K		4.7	1
L6002	VLQS66R101K		100	1
		CRYSTAL OSCILLATOR		
X6002	VSXS0009			1
	OR VSXS0011			1
		PIN HEADERS		
P1002	VJPS0011		3P	1
P1004	VJPS0013		5P	1
P1005	VJPS0022		7P	1
P1006	VJPS0012		4P	1
P6026	VJPS0099		3P	1
P6029	VJPS0102		6P	1
		FUSE		
F1001	ABA2C30N100		3A	1
		TRANSFORMER		
T1001	ETS35KB0A			1
		MISCELLANEOUS		
	TEL302-5X	CHECK TERMINAL		2
	TJ06320	FUSE HOLDER		2
	VMTS0035	CUSHION		4
	VMTS0044	CUSHION		1
	VMZS0130	INSULATOR PLATE		1
	VMZS0139	CAPACITOR CAP		1
	V8CS0403	HEAT SINK PLATE		1

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	VSCS0436	SHIELD CASE	1		Q4217	2SC2188		1	
	VSCS0437	SHIELD CASE	1		Q4218	2SD973(Q,R,S)		1	
	VSCS0542	SHIELD CASE	1		Q4219	2SC2188		1	
	VSCS0544	SHIELD CASE	1		Q4220	2SA564(R,S)		1	
	VSCS0604	SHIELD CASE	1			OR			
						2SB641(Q,R,S)			
					Q4221	2SC1684(Q,R,S)		1	
						OR 2S21M(Q,R,S)			
						OR			
		FM AUDIO C.B.A				2SD636(Q,R,S)			
		INTEGRATED CIRCUITS			Q4222	2SC2188		1	
IC4201	AN6326N		1		Q4224,4225	2SA564(R,S)		2	
IC4202	AN6558		1			OR			
	OR BA4558					2SB641(Q,R,S)			
IC4203	AN6391K		1		Q4240	2SA564(R,S)		1	
IC4204	VCRO087-1		1			OR			
IC4205	AN6291		1			2SB641(Q,R,S)			
IC4206	AN6558		1		Q4241	2SC1684(Q,R,S)		1	
	OR BA4558					OR 2S21M(Q,R,S)			
IC4207,4208	TA7347P		2			OR			
IC4209	VCRO087-1		1			2SD636(Q,R,S)			
IC4210	AN6391K		1		Q4242,4243	2SD655(B,F)		2	
IC4211	HA14066B		1		Q4244	2SC1684(Q,R,S)		1	
	OR TC4066B					OR 2S21M(Q,R,S)			
	OR UPD4066BC					OR			
	OR MN4066B					2SD636(Q,R,S)			
IC4213	AN6552		1		Q4245	2SA564(R,S)		1	
	OR BA4558					OR			
	OR TA75557P					2SB641(Q,R,S)			
IC4214,4215	TA7348P		2		Q4246-4248	DTC124A		3	
IC4216	BA6138		1			OR UN1212			
IC4217	AN6552		1		Q4251	2SC1684(Q,R,S)		1	
	OR BA4558					OR 2S21M(Q,R,S)			
	OR TA75557P					OR			
IC4218,4219	VCRS0030		2			2SD636(Q,R,S)			
					Q4253,4254	2SC1684(Q,R,S)		2	
						OR 2S21M(Q,R,S)			
		TRANSISTORS				OR			
Q4201-4203	2SD638(Q,R,S)		3			2SD636(Q,R,S)			
Q4204	2SC1684(Q,R,S)		1		Q4255	2SD1458		1	
	OR 2S21M(Q,R,S)				Q4256	DTC124A		1	
	OR					OR UN1212			
	2SD636(Q,R,S)				Q4260,4261	2SC1684(Q,R,S)		2	
Q4205	2SA564(R,S)		1			OR 2S21M(Q,R,S)			
	OR					OR			
	2SB641(Q,R,S)					2SD636(Q,R,S)			
Q4206	2SC1684(Q,R,S)		1		Q4262	DTA114A		1	
	OR 2S21M(Q,R,S)					OR UN1111			
	OR				Q4263	DTA144A		1	
	2SD636(Q,R,S)					OR UN1113			
Q4209,4210	2SA564(R,S)		2		Q4264	DTC114A		1	
	OR					OR UN1211			
	2SB641(Q,R,S)				Q4265	2SD1205(Q,R)		1	
Q4211	2SC1684(Q,R,S)		1		Q4271	2SC1684(R,S)		1	
	OR 2S21M(Q,R,S)					OR			
	OR					2SC2021M(R,S)			
	2SD636(Q,R,S)					OR 2SD636(R,S)			
Q4212	2SD638(Q,R,S)		1		Q4272	DTA124A		1	
Q4213	2SC1684(Q,R,S)		1			OR UN1112			
	OR 2S21M(Q,R,S)				Q4273	2SC1684(Q,R,S)		1	
	OR					OR 2S21M(Q,R,S)			
	2SD636(Q,R,S)					OR			
Q4215	2SC1684(Q,R,S)		1			2SD636(Q,R,S)			
	OR 2S21M(Q,R,S)				Q4274	DTC144A		1	
	OR					OR UN1213			
	2SD636(Q,R,S)				Q4275	2SD973(R,S)		1	
Q4216	2SA564(R,S)		1		Q4276	2SC1684(R,S)		1	
	OR					OR			
	2SB641(Q,R,S)					2SC2021M(R,S)			
						OR 2SD636(R,S)			

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		DIODES							
D4201	DA203		1		R4243-4245	ERDS2TJ223	22K	3	
	OR MA156				R4246	ERDS2TJ104	100K	1	
D4202,4203	MA165		2		R4248	ERDS2TJ152	1.5K	1	
	OR 1SS119				R4249	ERDS2TJ151	150	1	
D4205,4206	MA165		2		R4250	ERDS2TJ223	22K	1	
	OR 1SS119				R4251	ERDS2TJ333	33K	1	
D4207	DA203		1		R4252	ERDS2TJ272	2.7K	1	
	OR MA156				R4253,4254	ERDS2TJ473	47K	2	
D4209	MA165		1		R4255	ERDS2TJ333	33K	1	
	OR 1SS119				R4256	ERDS2TJ473	47K	1	
D4210	DAN201		1		R4259	ERDS2TJ223	22K	1	
	OR MA154				R4260	ERDS2TJ102	1K	1	
D4213	MA165		1		R4261	ERDS2TJ151	150	1	
	OR 1SS119				R4262	ERDS2TJ562	5.6K	1	
D4215	DAN201		1		R4263	ERDS2TJ103	10K	1	
	OR MA154				R4264	ERDS2TJ183	18K	1	
D4216	MA165		1		R4266	EVN3ACA00B23	VARIABLE	2K	1
	OR 1SS119				R4267	ERDS2TJ272	2.7K	1	
D4218	MA165		1		R4268,4269	ERDS2TJ681	680	2	
	OR 1SS119				R4270	ERDS2TJ222	2.2K	1	
D4220	MA165		1		R4271,4272	ERDS2TJ152	1.5K	2	
	OR 1SS119				R4273	ERDS2TJ222	2.2K	1	
D4221	RD5.1JB2	ZENER	1		R4274	ERDS2TJ103	10K	1	
D4222	MA165		1		R4275	ERDS2TJ392	3.9K	1	
	OR 1SS119				R4276	ERDS2TJ821	820	1	
					R4277	ERDS2TJ151	150	1	
					R4278	ERDS2TJ392	3.9K	1	
					R4279	ERDS2TJ102	1K	1	
					R4280	ERDS2TJ272	2.7K	1	
					R4281	ERDS2TJ392	3.9K	1	
					R4282	ERDS2TJ821	820	1	
					R4283	ERDS2TJ390	39	1	
					R4284	ERDS2TJ102	1K	1	
		RESISTORS			R4285	ERDS2TJ272	2.7K	1	
R4201,4202	ERDS2TJ100		10	2	R4286,4287	ERDS2TJ222	2.2K	2	
R4203,4204	ERDS2TJ332		3.3K	2	R4288	ERDS2TJ102	1K	1	
R4205	ERDS2TJ223		22K	1	R4289	ERDS2TJ392	3.9K	1	
R4206	ERDS2TJ152		1.5K	1	R4290,4291	ERDS2TJ152	1.5K	2	
R4207	ERDS2TJ100		10	1	R4293,4294	ERDS2TJ103	10K	2	
R4208	ERDS2TJ102		1K	1	R4295	ERDS2TJ272	2.7K	1	
R4209	ERDS2TJ222		2.2K	1	R4296	EVN3ACA00B13	VARIABLE	1K	1
R4210,4211	ERDS2TJ392		3.9K	2	R4297	ERDS2TJ153	15K	1	
R4212	ERDS2TJ102		1K	1	R4298	ERDS2TJ822	8.2K	1	
R4213	ERDS2TJ100		10	1	R4299	ERDS2TJ331	330	1	
R4214	ERDS2TJ471		470	1	R4300	ERDS2TJ681	680	1	
R4215	ERDS2TJ221		220	1	R4301	ERDS2TJ102	1K	1	
R4216	ERDS2TJ392		3.9K	1	R4303	ERDS2TJ272	2.7K	1	
R4217	ERDS2TJ474		470K	1	R4304	EVN3ACA00B23	VARIABLE	2K	1
R4218	EVN3ACA00B53	VARIABLE	5K	1	R4305	ERDS2TJ473	47K	1	
R4219	ERDS2TJ562		5.6K	1	R4306	ERDS2TJ223	22K	1	
R4221	ERDS2TJ562		5.6K	1	R4307	ERDS2TJ332	3.3K	1	
R4222	ERDS2TJ181		180	1	R4308	ERDS2TJ473	47K	1	
R4223	EVN3ACA00B13	VARIABLE	1K	1	R4309	ERDS2TJ683	68K	1	
R4224	ERDS2TJ821		820	1	R4310	ERDS2TJ562	5.6K	1	
R4225	ERDS2TJ102		1K	1	R4311	ERDS2TJ473	47K	1	
R4226	ERDS2TJ153		15K	1	R4312,4313	ERDS2TJ104	100K	2	
R4227	ERDS2TJ822		8.2K	1	R4314,4315	ERDS2TJ102	1K	2	
R4229	ERDS2TJ392		3.9K	1	R4316	ERDS2TJ562	5.6K	1	
R4230	ERDS2TJ562		5.6K	1	R4317	ERDS2TJ332	3.3K	1	
R4231	ERDS2TJ683		68K	1	R4318	ERDS2TJ222	2.2K	1	
R4232	ERDS2TJ105		1M	1	R4319	EVN3ACA00B25	VARIABLE	200K	1
R4233	ERDS2TJ104		100K	1	R4321	ERDS2TJ102	1K	1	
R4234	ERDS2TJ473		47K	1	R4323	ERDS2TJ102	1K	1	
R4235	ERDS2TJ562		5.6K	1	R4325	ERDS2TJ103	10K	1	
R4236	ERDS2TJ103		10K	1	R4326	ERDS2TJ122	1.2K	1	
R4237	ERDS2TJ272		2.7K	1	R4327,4328	ERDS2TJ391	390	2	
R4238	ERDS2TJ102		1K	1	R4329	ERDS2TJ103	10K	1	
R4239	ERDS2TJ104		100K	1	R4330,4331	ERDS2TJ104	100K	2	
R4240	EVN3ACA00B54	VARIABLE	50K	1	R4335	EVN3ACA00B23	VARIABLE	2K	1
R4241	ERDS2TJ102		1K	1	R4336	ERDS2TJ472	4.7K	1	
R4242	ERDS2TJ103		10K	1					

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R4337	ERDS2TJ153	15K	1	
R4338	EROS2TKG1001	PRECISION METAL FILM 1K $\pm 2\%$	1	
R4339	ERDS2TJ153	15K	1	
R4340	ERDS2TJ472	4.7K	1	
R4341	ERDS2TJ151	150	1	
R4342	ERDS2TJ122	1.2K	1	
R4343	ERDS2TJ103	10K	1	
R4352	EVN3ACA00B25	VARIABLE	200K	1
R4355	ERDS2TJ222	2.2K	1	
R4356	ERDS2TJ562	5.6K	1	
R4357	ERDS2TJ272	2.7K	1	
R4358,4359	ERDS2TJ333	33K	2	
R4360	ERDS2TJ272	2.7K	1	
R4361	ERDS2TJ562	5.6K	1	
R4362,4363	ERDS2TJ473	47K	2	
R4364	ERDS2TJ101	100	1	
R4365,4366	ERDS2TJ104	100K	2	
R4367	ERDS2TJ225	2.2M	1	
R4368	ERDS2TJ562	5.6K	1	
R4369	ERDS2TJ101	100	1	
R4370,4371	ERDS2TJ104	100K	2	
R4372	ERDS2TJ225	2.2M	1	
R4373	ERDS2TJ183	18K	1	
R4374	ERDS2TJ473	47K	1	
R4375,4376	ERDS2TJ472	4.7K	2	
R4377	ERDS2TJ103	10K	1	
R4378	ERDS2TJ562	5.6K	1	
R4379	ERDS2TJ473	47K	1	
R4380-4383	ERDS2TJ103	10K	4	
R4384-4387	ERDS2TJ104	100K	4	
R4388-4393	ERDS2TJ562	5.6K	6	
R4394,4395	ERDS2TJ473	47K	2	
R4396	ERDS2TJ102	1K	1	
R4397	ERDS2TJ272	2.7K	1	
R4399	ERDS2TJ104	100K	1	
R4400	ERDS2TJ184	180K	1	
R4401-4403	ERDS2TJ103	10K	3	
R4404	ERDS2TJ473	47K	1	
R4405	ERDS2TJ102	1K	1	
R4406	ERDS2TJ224	220K	1	
R4407	ERDS2TJ103	10K	1	
R4408	ERDS2TJ682	6.8K	1	
R4409,4410	ERDS2TJ333	33K	2	
R4411	ERDS2TJ224	220K	1	
R4412	ERDS2TJ682	6.8K	1	
R4413	ERDS2TJ224	220K	1	
R4414	ERDS2TJ473	47K	1	
R4419	ERDS2TJ102	1K	1	
R4421,4422	ERDS2TJ473	47K	2	
R4423	ERDS2TJ273	27K	1	
R4424	ERDS2TJ222	2.2K	1	
R4425	ERDS2TJ273	27K	1	
R4426	ERDS2TJ222	2.2K	1	
R4429	ERDS2TJ104	100K	1	
R4430	ERDS2TJ332	3.3K	1	
R4431	ERDS2TJ472	4.7K	1	
R4432	ERDS2TJ562	5.6K	1	
R4433,4434	ERDS2TJ223	22K	2	
R4435	ERDS2TJ473	47K	1	
R4436	ERDS2TJ224	220K	1	
R4437	ERDS2TJ104	100K	1	
R4438	ERDS2TJ223	22K	1	
R4439	ERDS2TJ104	100K	1	
R4440	ERDS2TJ562	5.6K	1	
R4441	ERDS2TJ332	3.3K	1	
R4442	ERDS2TJ562	5.6K	1	
R4443	ERDS2TJ332	3.3K	1	
R4445	ERDS2TJ222	2.2K	1	
R4446,4447	ERDS2TJ123	12K	2	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R4448	ERGT1AWJ470	METAL OXIDE 1W	47	1
	OR ERG1SJ470	METAL OXIDE 1W	47	
	OR ERG1SJ470	METAL OXIDE 1W	47	
R4449	ERDS2TJ102	1K	1	
R4450	ERDS2TJ222	2.2K	1	
R4451,4452	ERDS2TJ154	150K	2	
TH4201,4202	ERTD221K154M	THERMISTOR 150K	2	
		CAPACITORS		
C4201,4202	ECCZ1H470JC	CERAMIC 50V 47P $\pm 5\%$	2	
	OR ECCZ1H470JC5	CERAMIC 50V 47P $\pm 5\%$		
C4203,4204	ECKZ1H1032V	CERAMIC 50V 0.01	2	
		+80%-20%		
C4205	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4206	ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C4207	ECEA1HN010S	ELECTROLYTIC 50V	1	
C4208-4210	ECEA1CK100	ELECTROLYTIC 16V 10	3	
C4211	ECEA1HK010	ELECTROLYTIC 50V	1	
C4212	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4213	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4214	ECEA1CK330	ELECTROLYTIC 16V 33	1	
C4215-4217	ECKZ1H1032V	CERAMIC 50V 0.01	3	
		+80%-20%		
C4218	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4219	ECKZ1H1032V	CERAMIC 50V 0.01	1	
		+80%-20%		
C4220,4221	ECCZ1H680J	CERAMIC 50V 68P $\pm 5\%$	2	
	OR ECCZ1H680J6	CERAMIC 50V 68P $\pm 5\%$		
C4222	ECCZ1H820JC5	CERAMIC 50V 82P $\pm 5\%$	1	
	OR ECCZ1H820JC6	CERAMIC 50V 82P $\pm 5\%$		
C4223	ECKZ1H1032V	CERAMIC 50V 0.01	1	
		+80%-20%		
C4224	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4225	ECCW1H101JC5	CERAMIC 50V 100P $\pm 5\%$	1	
C4226,4227	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	2	
C4228	ECEA1AK220	ELECTROLYTIC 10V 22	1	
C4230	ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C4231	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4232	ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C4233	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4234	ECQB1H562KH	POLYESTER 50V 0.0056	1	
C4235	ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C4236	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4237	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4238	ECKZ1H331KB	CERAMIC 50V 330P	1	
	OR ECKZ1H331KB6	CERAMIC 50V 330P		
C4239	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4240	ECEA1CK101	ELECTROLYTIC 16V 100	1	
C4241	ECCZ1H330J	CERAMIC 50V 33P $\pm 5\%$	1	
	OR ECCZ1H330J6	CERAMIC 50V 33P $\pm 5\%$		
C4242	ECQB1H183JZ	POLYESTER 50V 0.018 $\pm 5\%$	1	
	OR ECQV1H183JZ	POLYESTER 50V 0.018 $\pm 5\%$		
C4243	ECEA1CK330	ELECTROLYTIC 16V 33	1	
C4244,4245	ECEA1AK330	ELECTROLYTIC 10V 33	2	
C4246	ECCZ1H330J	CERAMIC 50V 33P $\pm 5\%$	1	
	OR ECCZ1H330J6	CERAMIC 50V 33P $\pm 5\%$		
C4247	ECEA1CK101	ELECTROLYTIC 16V 100	1	
C4248	ECEA1AK330	ELECTROLYTIC 10V 33	1	
C4249	ECQB1H183JZ	POLYESTER 50V 0.018 $\pm 5\%$	1	
	OR ECQV1H183JZ	POLYESTER 50V 0.018 $\pm 5\%$		
C4250	ECEA0JK330	ELECTROLYTIC 6.3V 33	1	
C4251	ECKZ1H1032V	CERAMIC 50V 0.01	1	
		+80%-20%		
C4252	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4253,4254	ECKZ1H1032V	CERAMIC 50V 0.01	2	
		+80%-20%		
C4255	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4256	ECEA0JK470	ELECTROLYTIC 6.3V 47	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C4257	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4259	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4260	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4261	ECQB1H183JZ	POLYESTER 50V 0.018 +-5%	1	
	OR ECQV1H183JZ	POLYESTER 50V 0.018 +-5%		
C4262	ECEA5OM3R3R	ELECTROLYTIC 50V 3.3	1	
C4263	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4264	ECQB1H123JZ	POLYESTER 50V 0.012 +-5%	1	
	OR ECQV1H123JZ	POLYESTER 50V 0.012 +-5%		
C4265,4266	ECEA5OZ3R3	ELECTROLYTIC 50V 3.3	2	
C4267	ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C4268	ECQB1H123JZ	POLYESTER 50V 0.012 +-5%	1	
	OR ECQV1H123JZ	POLYESTER 50V 0.012 +-5%		
C4269	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4270	ECEA16M10R	ELECTROLYTIC 16V 10	1	
C4271	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4272	ECQB1H123JZ	POLYESTER 50V 0.012 +-5%	1	
	OR ECQV1H123JZ	POLYESTER 50V 0.012 +-5%		
C4273	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4274	ECCW1H331J5	CERAMIC 50V 330P +-5%	1	
C4275	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4276	ECQB1H472JH	POLYESTER 50V 0.0047 +-5%	1	
C4277	ECQB1H223JZ	POLYESTER 50V 0.022 +-5%	1	
	OR ECQV1H223JZ	POLYESTER 50V 0.022 +-5%		
C4278	ECEA5OM3R3R	ELECTROLYTIC 50V 3.3	1	
C4279	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4280	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4281	ECQB1H183JZ	POLYESTER 50V 0.018 +-5%	1	
	OR ECQV1H183JZ	POLYESTER 50V 0.018 +-5%		
C4282	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4283,4284	ECCZ1H470J	CERAMIC 50V 47P +-5%	2	
	OR ECCZ1H470J6	CERAMIC 50V 47P +-5%		
C4285	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4286	ECCZ1H820J05	CERAMIC 50V 82P +-5%	1	
	OR ECCZ1H820J06	CERAMIC 50V 82P +-5%		
C4287	ECQB1H102KH	POLYESTER 50V 0.001	1	
C4288	ECCW1H101J05	CERAMIC 50V 100P +-5%	1	
C4289	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4290	ECEA1AK220	ELECTROLYTIC 10V 22	1	
C4292	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4293	ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C4294	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4295	ECQB1H562KH	POLYESTER 50V 0.0056	1	
C4296	ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C4297	ECKZ1H221KB	CERAMIC 50V 220P	1	
	OR ECKZ1H221KB6	CERAMIC 50V 220P		
C4298	ECKZ1H331KB	CERAMIC 50V 330P	1	
	OR ECKZ1H331KB6	CERAMIC 50V 330P		
C4299	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4300	ECQB1H103KH	POLYESTER 50V 0.01	1	
C4301	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4302-4304	ECEA1AK330	ELECTROLYTIC 10V 33	3	
C4305	ECEA1CK220	ELECTROLYTIC 16V 22	1	
C4306	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4307	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4308	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4309	ECQV05104JB	POLYESTER 50V 0.1 +-5%	1	
	OR ECQV05104JC	POLYESTER 50V 0.1 +-5%		
	OR ECQV1H104JZ	POLYESTER 50V 0.1 +-5%		
C4310	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4311	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4312	ECQV05104JB	POLYESTER 50V 0.1 +-5%	1	
	OR ECQV05104JC	POLYESTER 50V 0.1 +-5%		
	OR ECQV1H104JZ	POLYESTER 50V 0.1 +-5%		
C4313	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4314-4316	ECEA1CK100	ELECTROLYTIC 16V 10	3	
C4317	ECCZ1H820J	CERAMIC 50V 82P +-5%	1	
	OR ECCZ1H820J6	CERAMIC 50V 82P +-5%		

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C4318	ECEA1CK220	ELECTROLYTIC 16V 22	1	
C4319-4322	ECEA1CK100	ELECTROLYTIC 16V 10	4	
C4323	ECCZ1H820J	CERAMIC 50V 82P +-5%	1	
	OR ECCZ1H820J6	CERAMIC 50V 82P +-5%		
C4324	ECEA1CK220	ELECTROLYTIC 16V 22	1	
C4325,4326	ECEA1CK100	ELECTROLYTIC 16V 10	2	
C4327,4328	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	2	
C4331,4332	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	2	
C4335	ECEA1AK470	ELECTROLYTIC 10V 47	1	
C4337	ECEA1CK330	ELECTROLYTIC 16V 33	1	
C4338	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4339	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4340	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4341	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4342	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4343	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4344	ECCZ1H820J	CERAMIC 50V 82P +-5%	1	
	OR ECCZ1H820J6	CERAMIC 50V 82P +-5%		
C4345	QCEA1CSS221G	ELECTROLYTIC 16V 220	1	
	OR SCEA1CSS221	ELECTROLYTIC 16V 220		
C4346	ECEA1EK4R7	ELECTROLYTIC 25V 4.7	1	
C4347-4349	ECEA1CK100	ELECTROLYTIC 16V 10	3	
C4350	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4351	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4352	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4353	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4354	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4355	ECCZ1H820J	CERAMIC 50V 82P +-5%	1	
	OR ECCZ1H820J6	CERAMIC 50V 82P +-5%		
C4357	ECKZ1H471KB	CERAMIC 50V 470P	1	
	OR ECKZ1H471KB6	CERAMIC 50V 470P		
C4359,4360	VCYD1C104MX	CERAMIC 16V 0.1 +-20%	2	
C4361	ECQB1H222KH	POLYESTER 50V 0.0022	1	
C4362	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4363	ECQB1H222KH	POLYESTER 50V 0.0022	1	
C4364	ECEA1CK100	ELECTROLYTIC 16V 10	1	
C4365	ECEA16M10R	ELECTROLYTIC 16V 10	1	
C4366	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4367	ECQB1H123JZ	POLYESTER 50V 0.012 +-5%	1	
	OR ECQV1H123JZ	POLYESTER 50V 0.012 +-5%		
C4368,4369	ECEA1CK100	ELECTROLYTIC 16V 10	2	
C4370	ECQB1H223JZ	POLYESTER 50V 0.022 +-5%	1	
	OR ECQV1H223JZ	POLYESTER 50V 0.022 +-5%		
C4371	ECKZ1H103ZV	CERAMIC 50V 0.01	1	
		+80%-20%		
C4372	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C4373	ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C4374	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C4375	ECQB1H472JH	POLYESTER 50V 0.0047 +-5%	1	
C4376	ECCW1H331J5	CERAMIC 50V 330P +-5%	1	
C4377	ECKZ1H221KB	CERAMIC 50V 220P	1	
	OR ECKZ1H221KB6	CERAMIC 50V 220P		
C4378,4379	ECEA1CK100	ELECTROLYTIC 16V 10	2	
C4380	ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4381	ECEA1HK010	ELECTROLYTIC 50V 1	1	
C4383	ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C4386	ECEA1CK101	ELECTROLYTIC 16V 100	1	
C4387,4388	ECQB1H103KH	POLYESTER 50V 0.01	2	
C4389	ECEA1EK4R7	ELECTROLYTIC 25V 4.7	1	
C4390	ECEA1CK101	ELECTROLYTIC 16V 100	1	
C4391,4392	ECEA1CK100	ELECTROLYTIC 16V 10	2	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R4089	ERDS2TJ100		10 1		C4035	ECQB1H183JZ	POLYESTER 50V 0.018 +5%	1	
R4101	ERDS2TJ222		2.2K 1			OR ECQV05183JZ	POLYESTER 50V 0.018 +5%		
R4102	ERDS2TJ103		10K 1			OR ECQV1H183JZ	POLYESTER 50V 0.018 +5%		
R4103	ERDS2TJ562		5.6K 1		C4036	ECEA1HK010	ELECTROLYTIC 50V	1 1	
R4104	ERDS2TJ822		8.2K 1		C4037	ECSF1CD224KD	TANTALUM 16V 0.22	1	
R4105	ERDS2TJ220		22 1		C4038	ECSF1CD684KD	TANTALUM 16V 0.68	1	
R4106	ERDS2TJ333		33K 1		C4051	ECEA0JK221	ELECTROLYTIC 6.3V 220	1	
R4107	ERDS2TJ103		10K 1		C4052	ECKW1H471KB5	CERAMIC 50V 470P	1	
R4108	ERDS2TJ472		4.7K 1		C4053	ECEA50M1R	ELECTROLYTIC 50V	1 1	
R4109	ERDS2TJ223		22K 1		C4054	ECKW1H471KB5	CERAMIC 50V 470P	1	
R4110-4112	ERDS2TJ562		5.6K 3		C4055	ECEA50ZR33	ELECTROLYTIC 50V 0.33	1	
R4126,4127	ERDS2TJ822		8.2K 2		C4056	ECEA50ZR22	ELECTROLYTIC 50V 0.22	1	
R4128	ERDS2TJ681		680 1		C4057	ECEA1CS220	ELECTROLYTIC 16V 22	1	
R4129-4135	ERDS2TJ223		22K 7			OR ECEA1CU220	ELECTROLYTIC 16V 22		
R4136,4137	ERDS2TJ103		10K 2		C4058	ECQB1H333JZ	POLYESTER 50V 0.033 +5%	1	
R4138,4139	ERDS2TJ473		47K 2			OR ECQV05333JZ	POLYESTER 50V 0.033 +5%		
R4140,4141	ERDS2TJ222		2.2K 2			OR ECQV1H333JZ	POLYESTER 50V 0.033 +5%		
R4142,4143	ERDS2TJ223		22K 2		C4059	ECEA1CS100	ELECTROLYTIC 16V 10	1	
R4144	ERDS2TJ393		39K 1			OR ECEA1CU100	ELECTROLYTIC 16V 10		
					C4060	ECEA50ZR33	ELECTROLYTIC 50V 0.33	1	
					C4061	ECEA1CS100	ELECTROLYTIC 16V 10	1	
						OR ECEA1CU100	ELECTROLYTIC 16V 10		
		CAPACITORS			C4065	ECKW1H102KB5	CERAMIC 50V 0.001	1	
C4002	ECKW1H471KB5	CERAMIC 50V 470P	1		C4066	ECEA1CS100	ELECTROLYTIC 16V 10	1	
C4003	ECEA50M1R	ELECTROLYTIC 50V	1 1			OR ECEA1CU100	ELECTROLYTIC 16V 10		
C4004	ECKW1H471KB5	CERAMIC 50V 470P	1		C4067	ECEA1CS220	ELECTROLYTIC 16V 22	1	
C4005	ECEA50ZR33	ELECTROLYTIC 50V 0.33	1			OR ECEA1CU220	ELECTROLYTIC 16V 22		
C4006	ECEA50ZR22	ELECTROLYTIC 50V 0.22	1		C4068	ECEA1CS330	ELECTROLYTIC 16V 33	1	
C4007	ECEA1CS220	ELECTROLYTIC 16V 22	1			OR ECEA1CU330	ELECTROLYTIC 16V 33		
	OR ECEA1CU220	ELECTROLYTIC 16V 22			C4069	ECEA1HS010	ELECTROLYTIC 50V	1 1	
C4008	ECQB1H333JZ	POLYESTER 50V 0.033 +5%	1			OR ECEA1HU010	ELECTROLYTIC 50V	1	
	OR ECQV05333JZ	POLYESTER 50V 0.033 +5%			C4070	ECQV05563JZ	POLYESTER 50V 0.056 +5%	1	
	OR ECQV1H333JZ	POLYESTER 50V 0.033 +5%				OR ECQV1H563JZ	POLYESTER 50V 0.056 +5%		
C4009	ECEA1CS100	ELECTROLYTIC 16V 10	1		C4071	ECEA1AS330	ELECTROLYTIC 10V 33	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10				OR ECEA1AU330	ELECTROLYTIC 10V 33		
C4010	ECEA50ZR33	ELECTROLYTIC 50V 0.33	1		C4072,4073	ECEA50ZOR1	ELECTROLYTIC 50V 0.1	2	
C4011	ECEA1CS100	ELECTROLYTIC 16V 10	1		C4074	ECEA1AS330	ELECTROLYTIC 10V 33	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10				OR ECEA1AU330	ELECTROLYTIC 10V 33		
C4015	ECKW1H102KB5	CERAMIC 50V 0.001	1		C4075	VCYW1C104MX	CERAMIC 16V 0.1 +20%	1	
C4016	ECEA1CS100	ELECTROLYTIC 16V 10	1		C4076	ECEA1CKN100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU100	ELECTROLYTIC 16V 10			C4077	ECEA1HS010	ELECTROLYTIC 50V	1 1	
C4017	ECEA1CS220	ELECTROLYTIC 16V 22	1			OR ECEA1HU010	ELECTROLYTIC 50V	1	
	OR ECEA1CU220	ELECTROLYTIC 16V 22			C4078	ECEA1CK470	ELECTROLYTIC 16V 47	1	
C4018	ECEA1CS330	ELECTROLYTIC 16V 33	1		C4079	ECEA1CKN100	ELECTROLYTIC 16V 10	1	
	OR ECEA1CU330	ELECTROLYTIC 16V 33			C4080	ECQB1H333JZ	POLYESTER 50V 0.033 +5%	1	
C4019	ECEA1HS010	ELECTROLYTIC 50V	1 1			OR ECQV05333JZ	POLYESTER 50V 0.033 +5%		
	OR ECEA1HU010	ELECTROLYTIC 50V	1			OR ECQV1H333JZ	POLYESTER 50V 0.033 +5%		
C4020	ECQV05563JZ	POLYESTER 50V 0.056 +5%	1		C4081	ECQB1H472JZ	POLYESTER 50V 0.0047 +5%	1	
	OR ECQV1H563JZ	POLYESTER 50V 0.056 +5%				OR ECQM1H472JV	POLYESTER 50V 0.0047 +5%		
C4021	ECEA1AS330	ELECTROLYTIC 10V 33	1		C4082	ECEA1EKL4R7	ELECTROLYTIC 25V 4.7	1	
	OR ECEA1AU330	ELECTROLYTIC 10V 33			C4083	ECEA1CKN100	ELECTROLYTIC 16V 10	1	
C4022,4023	ECEA50ZOR1	ELECTROLYTIC 50V 0.1	2		C4084	ECQV05473JZ	POLYESTER 50V 0.047 +5%	1	
C4024	ECEA1AS330	ELECTROLYTIC 10V 33	1			OR ECQV1H473JZ	POLYESTER 50V 0.047 +5%		
	OR ECEA1AU330	ELECTROLYTIC 10V 33			C4085	ECQB1H183JZ	POLYESTER 50V 0.018 +5%	1	
C4025	VCYW1C104MX	CERAMIC 16V 0.1 +20%	1			OR ECQV05183JZ	POLYESTER 50V 0.018 +5%		
C4026	ECEA1CKN100	ELECTROLYTIC 16V 10	1			OR ECQV1H183JZ	POLYESTER 50V 0.018 +5%		
C4027	ECEA1HS010	ELECTROLYTIC 50V	1 1		C4086	ECEA1HK010	ELECTROLYTIC 50V	1 1	
	OR ECEA1HU010	ELECTROLYTIC 50V	1		C4087	ECSF1CD224KD	TANTALUM 16V 0.22	1	
C4028	ECEA1CK100	ELECTROLYTIC 16V 10	1		C4088	ECSF1CD684KD	TANTALUM 16V 0.68	1	
C4029	ECEA1CKN100	ELECTROLYTIC 16V 10	1		C4101	ECEA1CK101	ELECTROLYTIC 16V 100	1	
C4030	ECQB1H333JZ	POLYESTER 50V 0.033 +5%	1		C4102	ECEA1CS470	ELECTROLYTIC 16V 47	1	
	OR ECQV05333JZ	POLYESTER 50V 0.033 +5%				OR ECEA1CU470	ELECTROLYTIC 16V 47		
	OR ECQV1H333JZ	POLYESTER 50V 0.033 +5%			C4103	ECEA1HSR47	ELECTROLYTIC 50V 0.47	1	
C4031	ECQB1H472JZ	POLYESTER 50V 0.0047 +5%	1			OR ECEA1HUR47	ELECTROLYTIC 50V 0.47		
	OR ECQM1H472JV	POLYESTER 50V 0.0047 +5%			C4104,4105	ECKW1H102KB5	CERAMIC 50V 0.001	2	
C4032	ECEA1EKL4R7	ELECTROLYTIC 25V 4.7	1		C4106	ECEA1CS220	ELECTROLYTIC 16V 22	1	
C4033	ECEA1CKN100	ELECTROLYTIC 16V 10	1			OR ECEA1CU220	ELECTROLYTIC 16V 22		
C4034	ECQV05473JZ	POLYESTER 50V 0.047 +5%	1		C4107	VCYW1E103KX	CERAMIC 25V 0.01	1	
	OR ECQV1H473JZ	POLYESTER 50V 0.047 +5%			C4108	VCYW1E333KX	CERAMIC 25V 0.033	1	
					C4109	ECQP1332JZ	POLYESTER 100V 0.0033 +5%	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
G4110,4111	ECRHC060G11	TRIMMER	60P 2	
	OR ECV12W60X64	TRIMMER	60P	
	OR VCWSAW60X1R	TRIMMER	60P	
G4123	ECEA1HS2R2	ELECTROLYTIC	50V 2.2 1	
	OR ECEA1HU2R2	ELECTROLYTIC	50V 2.2	
G4124	VCYW1E333KX	CERAMIC	25V 0.033 1	
		FILTERS		
FL4001,4002	VLFS0002		2	
		COILS		
L4001	VLQS78F222K		2.2M 1	
L4002	VLQS67F222K		2.2M 1	
L4003	VLQS78F222K		2.2M 1	
L4004	VLQS67F222K		2.2M 1	
L4005,4006	VLQS66F471K		470 2	
		PIN HEADER		
P4001	VJPS0104		8P 1	
		TRANSFORMER		
T4001	ELM7Q020E		1	
		MISCELLANEOUS		
	VMTS0035	CUSHION	6	
	VSCS0439	SHIELD CASE	1	
	VSCS0440	SHIELD CASE	1	
	VSCS0441	SHIELD CASE	1	
	VZFS0006	CLAMPER	1	
		OPERATION/AUDIO LEVEL METER		
		C.B.A		
		INTEGRATED CIRCUITS		
IC7801,7802	BA668A		2	
IC7803	BA222		1	
		DIODES		
D6301-6308	MA165		8	
	OR 1SS119			
D7808-7812	BR5608S	LED	5	
D7901	LN31GCPHL	LED	1	
		RESISTORS		
R6301	ERDS2TJ392		3.9K 1	
R7804	ERDS2TJ103		10K 1	
R7805	ERDS2TJ272		2.7K 1	
R7806	ERDS2TJ561		560 1	
R7807	ERDS2TJ394		390K 1	
R7808	ERDS2TJ272		2.7K 1	
R7809	ERDS2TJ561		560 1	
R7810	ERDS2TJ394		390K 1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R7811	ERDS2TJ103		10K 1	
R7814	ERDS2TJ333		33K 1	
R7815	ERDS2TJ274		270K 1	
R7816	ERDS2TJ153		15K 1	
R7817-7819	ERDS2TJ182		1.8K 3	
R7820,7821	VRVS0001	VARIABLE	5K 2	
R7905	ERDS2TJ271		270 1	
		CAPACITORS		
C7801,7802	ECEA1CK100	ELECTROLYTIC	16V 10 2	
C7803	ECEA1EK4R7	ELECTROLYTIC	25V 4.7 1	
C7804	ECEA1CK330	ELECTROLYTIC	16V 33 1	
C7805	ECEA1CK100	ELECTROLYTIC	16V 10 1	
C7806	ECEA1EK4R7	ELECTROLYTIC	25V 4.7 1	
C7807	ECEA1CK100	ELECTROLYTIC	16V 10 1	
C7809	ECEA1CK100	ELECTROLYTIC	16V 10 1	
		SWITCHES		
SW6301-6310	EVQ-QJ104K	PUSH	10	
SW7821	ESB-65143	SELECT	1	
SW7901,7902	EVQSR05K	PUSH	2	
SW7903	EVQ-QJ104K	PUSH	1	
SW7906	VSSS0031	SELECT	1	
SW7907	EVQSR05K	PUSH	1	
		MISCELLANEOUS		
	VGMS0077	LEVEL METER HOLDER	1	
	VMS0248	LED SPACER	1	
	VMXS0036	LED SPACER	1	
	VMZS0141	BARRIER	1	
DP7801	VSZS0027	LEVEL METER DISPLAY TUBE	1	
		PROGRAMMABLE TIMER C.B.A		
		INTEGRATED CIRCUITS		
IC7501	UPD7538C-021		1	
	OR UPD7538C-028			
		TRANSISTOR		
Q7502	2SD636(Q,R,S)		1	
		DIODES		
DX7201	VCRS0037	COMPLEX COMPONENT	1	
DX7202	VCRS0038	COMPLEX COMPONENT	1	
DX7503-7505	VCRS0038	COMPLEX COMPONENT	3	
D7215-7228	LN31GCPUHL	LED	14	
D7501	MA166		1	
D7502	RD9.1EB	ZENER	1	
D7504-7517	MA166		14	
D7542,7543	MA166		2	
D7545	RD20EB	ZENER	1	
		RESISTORS		
R7501,7502	ERDS2TJ104		100K 2	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R3120,3121	ERDS2TJ122	1.2K	2				C/R COMPLEX COMPONENT		
R3122	ERDS2TJ562	5.6K	1		CR3101	EXRP391K332	50V 390P, 3.3K	1	
R3123	EVNE4AA00B24	VARIABLE	20K	1	CR3102	EXRP103M184	50V 0.01 +-20%, 180K	1	
R3125	ERDS2TJ122	1.2K	1		CR3103	EXRP391K271	50V 390P, 270	1	
R3126	ERDS2TJ152	1.5K	1		CR3104	EXRP271K152	50V 270P, 1.5K	1	
R3127	ERDS2TJ182	1.8K	1						
R3128	ERDS2TJ471	470	1						
R3129	ERDS2TJ151	150	1						
R3130	ERDS2TJ222	2.2K	1				DELAY LINE		
R3131	ERDS2TJ121	120	1		DL3101	EPDEN645A12P		1	
R3132	ERDS2TJ103	10K	1			OR VLDS0003			
R3133,3134	ERDS2TJ152	1.5K	2						
R3135	ERDS2TJ122	1.2K	1						
R3140,3141	ERDS2TJ824	820K	2						
R3143	ERDS2TJ473	47K	1				FILTER		
					FL3101	ELB4M006		1	
						OR VLFS0011			
		CAPACITORS							
C3101	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1						
C3102	ECCW1H390J5	CERAMIC 50V 39P +-5%	1				COILS		
C3103	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1		L3101-3103	VLQSO5R101K	100	3	
C3105	VCYSARH101KB	CERAMIC 50V 100P	1		L3104	VLQSO5R270K	27	1	
C3106	ECEA1HSR47	ELECTROLYTIC 50V 0.47	1		L3105	VLQSO5R101K	100	1	
C3107	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1		L3106,3107	VLQSO5R100K	10	2	
C3108	ECEAOJS221	ELECTROLYTIC 6.3V 220	1						
	OR ECEAOJU221	ELECTROLYTIC 6.3V 220							
C3109	VCYSARH471KB	CERAMIC 50V 470P	1						
C3110	VCYSARH391KB	CERAMIC 50V 390P	1				MISCELLANEOUS		
C3111	VCYSARH561KB	CERAMIC 50V 560P	1			VJHS0046	PACK LEAD PIN	1	
C3112	ECEA1HS010	ELECTROLYTIC 50V	1	1		VMXS0366	SPACER	1	
	OR ECEA1HU010	ELECTROLYTIC 50V	1			VMZS0081	SPACER	1	
C3113	ECCW1H680J5	CERAMIC 50V 68P +-5%	1			VSCS0494	ANGLE	1	
C3114	VCYSARH331KB	CERAMIC 50V 330P	1						
C3115	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1						
C3117-3122	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	6						
C3123,3124	ECCW1H390J5	CERAMIC 50V 39P +-5%	2						
C3125	ECEAOJS221	ELECTROLYTIC 6.3V 220	1						
	OR ECEAOJU221	ELECTROLYTIC 6.3V 220							
C3126-3128	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	3				CHROMINANCE C.B.A		
C3129	ECCW1H390J5	CERAMIC 50V 39P +-5%	1						
C3130	ECEA1HS010	ELECTROLYTIC 50V	1	1			INTEGRATED CIRCUITS		
	OR ECEA1HU010	ELECTROLYTIC 50V	1		IC8101	AN6366NK		1	
C3131	ECCW1H390J5	CERAMIC 50V 39P +-5%	1		IC8102	MN6163A		1	
C3132	ECEA1ES3R3	ELECTROLYTIC 25V 3.3	1						
	OR ECEA1EU3R3	ELECTROLYTIC 25V 3.3							
C3133,3134	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	2				TRANSISTORS		
C3135	ECEA1HS010	ELECTROLYTIC 50V	1	1	Q8101-8104	2SC2021M(Q,R,S)		4	
	OR ECEA1HU010	ELECTROLYTIC 50V	1			OR			
C3136	VCYSARH681KB	CERAMIC 50V 680P	1			2SD636(Q,R,S)			
C3137	ECCW1H151J5	CERAMIC 50V 150P +-5%	1						
C3138	ECCW1H221J5	CERAMIC 50V 220P +-5%	1						
	OR VCKW1H221JSA	CERAMIC 50V 220P +-5%							
C3139	VCYSARC103NY	CERAMIC 16V 0.01 +-30%	1				DIODES		
C3140	ECCW1H561J5	CERAMIC 50V 560P +-5%	1		D8101,8102	MA165		2	
	OR VCKW1H561JSA	CERAMIC 50V 560P +-5%				OR 1SS119			
C3141	ECCW1H820J5	CERAMIC 50V 82P +-5%	1						
C3142	ECEA1ES3R3	ELECTROLYTIC 25V 3.3	1						
	OR ECEA1EU3R3	ELECTROLYTIC 25V 3.3							
C3143	ECEA1ES4R7	ELECTROLYTIC 25V 4.7	1				RESISTORS		
	OR ECEA1EU4R7	ELECTROLYTIC 25V 4.7			R8101	ERDS2TJ102	1K	1	
C3144	ECEA1CS220	ELECTROLYTIC 16V 22	1		R8102	ERDS2TJ121	120	1	
	OR ECEA1CU220	ELECTROLYTIC 16V 22			R8103	ERDS2TJ152	1.5K	1	
C3145	ECEA1ES3R3	ELECTROLYTIC 25V 3.3	1		R8104	ERDS2TJ122	1.2K	1	
	OR ECEA1EU3R3	ELECTROLYTIC 25V 3.3			R8105	ERDS2TJ222	2.2K	1	
C3147	ECEA1HS2R2	ELECTROLYTIC 50V 2.2	1		R8106	ERDS2TJ272	2.7K	1	
					R8107,8108	ERDS2TJ682	6.8K	2	
					R8109	EVNE4AA00B54	VARIABLE	50K	1
					R8110	ERDS2TJ183	18K	1	
					R8111	ERDS2TJ271	270	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R8112	ERDS2TJ822	8.2K	1	
R8113	EVNE4AA00B53	VARIABLE	5K	1
R8114	ERDS2TJ122	1.2K	1	
R8115	ERDS2TJ822	8.2K	1	
R8116	ERDS2TJ183	18K	1	
R8117	ERDS2TJ471	470	1	
R8119	ERDS2TJ223	22K	1	
R8120	ERDS2TJ102	1K	1	
R8121	ERDS2TJ103	10K	1	
R8122	ERDS2TJ470	47	1	
R8123,8124	ERDS2TJ122	1.2K	2	
R8125	ERDS2TJ102	1K	1	
R8126	ERDS2TJ271	270	1	
R8127	ERDS2TJ102	1K	1	
R8129	ERDS2TJ822	8.2K	1	
R8130	ERDS2TJ183	18K	1	
R8131	ERDS2TJ562	5.6K	1	
R8132	ERDS2TJ561	560	1	
R8133	ERDS2TJ273	27K	1	
R8134	ERDS2TJ153	15K	1	
R8135	ERDS2TJ561	560	1	
R8136	ERDS2TJ472	4.7K	1	
R8137	ERDS2TJ821	820	1	
R8138	ERDS2TJ472	4.7K	1	
R8139	ERDS2TJ122	1.2K	1	
		CAPACITORS		
C8101,8102	VCYSARC103NY	CERAMIC 16V 0.01 +30%	2	
C8103	VCYW1E183KX	CERAMIC 25V 0.018	1	
C8104	VCYSARH680J	CERAMIC 50V 68P +5%	1	
C8105,8106	VCYSARH121KB	CERAMIC 50V 120P	2	
C8107	VCYSARC103NY	CERAMIC 16V 0.01 +30%	1	
C8108	ECEA1HS010	ELECTROLYTIC 50V	1	
	OR ECEA1HU010	ELECTROLYTIC 50V	1	
C8109	ECEAOJS470	ELECTROLYTIC 6.3V	47	1
	OR ECEAOJU470	ELECTROLYTIC 6.3V	47	
C8110	VCYSARH56K6C	CERAMIC 50V 5.6P	1	
C8111	MCV03R200ER	TRIMMER 20P	1	
C8112	VCYSARH102KB	CERAMIC 50V 0.001	1	
C8113	ECEAOJS221	ELECTROLYTIC 6.3V	220	1
	OR ECEAOJU221	ELECTROLYTIC 6.3V	220	
C8114	VCYSARC103NY	CERAMIC 16V 0.01 +30%	1	
C8115	VCYSARH102KB	CERAMIC 50V 0.001	1	
C8116	VCYSARC103NY	CERAMIC 16V 0.01 +30%	1	
C8117	VCYW1C104MX	CERAMIC 16V 0.1 +20%	1	
C8118,8119	VCYSARC103NY	CERAMIC 16V 0.01 +30%	2	
C8120	VCYSARC222NX	CERAMIC 16V 0.0022 +30%	1	
C8121	VCYSARC103NY	CERAMIC 16V 0.01 +30%	1	
C8122	VCYW1C104MX	CERAMIC 16V 0.1 +20%	1	
C8123-8130	VCYSARC103NY	CERAMIC 16V 0.01 +30%	8	
C8131	VCYSARH680J	CERAMIC 50V 68P +5%	1	
C8132	VCYSARH271KB	CERAMIC 50V 270P	1	
C8133	VCYSARH680J	CERAMIC 50V 68P +5%	1	
C8134	VCYSARC472NX	CERAMIC 16V 0.0047 +30%	1	
C8135	VCYSARH680J	CERAMIC 50V 68P +5%	1	
C8136	VCYSARH220J	CERAMIC 50V 22P +5%	1	
C8137	ECEA1ES3R3	ELECTROLYTIC 25V	3.3	1
	OR ECEA1EU3R3	ELECTROLYTIC 25V	3.3	
C8138	ECEA1ES4R7	ELECTROLYTIC 25V	4.7	1
	OR ECEA1EU4R7	ELECTROLYTIC 25V	4.7	
C8139	VCYW1C104MX	CERAMIC 16V 0.1 +20%	1	
C8140	VCYSARH150JC	CERAMIC 50V 15P +5%	1	
C8142	VCYW1C104MX	CERAMIC 16V 0.1 +20%	1	
		DELAY LINE		
DL8101	EFDVN645B15G		1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		FILTER		
FL8101	ELB5G040		1	
	OR VLF50008			
		COILS		
L8101	VLQ805R471K		470	1
L8102	VLQ805R221K		220	1
L8103	VLQ805R331K		330	1
L8104,8105	VLQ805R101K		100	2
L8106,8107	VLQ805R181K		180	2
L8108	VLQ866R102K		1M	1
L8109	VLQ805R470K		47	1
		CRYSTAL OSCILLATOR		
X8101	VSXS0003		1	
	OR VSX0060			
		MISCELLANEOUS		
	VJHS0046	PACK LEAD PIN	1	
		TV DEMODULATOR UNIT		
		INTEGRATED CIRCUITS		
IC701	AN5135K		1	
		TRANSISTORS		
Q701	2SC2188		1	
Q702	2SD637(Q,R)		1	
		DIODE		
D701	MA27T		1	
		RESISTORS		
R702,703	ERDS2TJ562		5.6K	2
R704	ERDS2TJ271		270	1
R705	ERDS2TJ221		220	1
R706,707	ERDS2TJ821		820	2
R708	ERDS2TJ561		560	1
R709	ERDS2TJ470		47	1
R710	ERDS2TJ122		1.2K	1
R711	ERDS2TJ474		470K	1
R712	ERDS2TJ183		18K	1
R713	ERDS2TJ221		220	1
R714	ERDS2TJ821		820	1
R715	AVNE4AAOB682	VARIABLE	6.8K	1
	OR EVNE4AAOB53	VARIABLE	5K	
R716	ERDS2TJ471		470	1
R718	AVNE4AAB103	VARIABLE	10K	1
	OR EVNE4AAOB14	VARIABLE	10K	
R719	ERDS2TJ272		2.7K	1
R720	ERDS2TJ680		68	1

